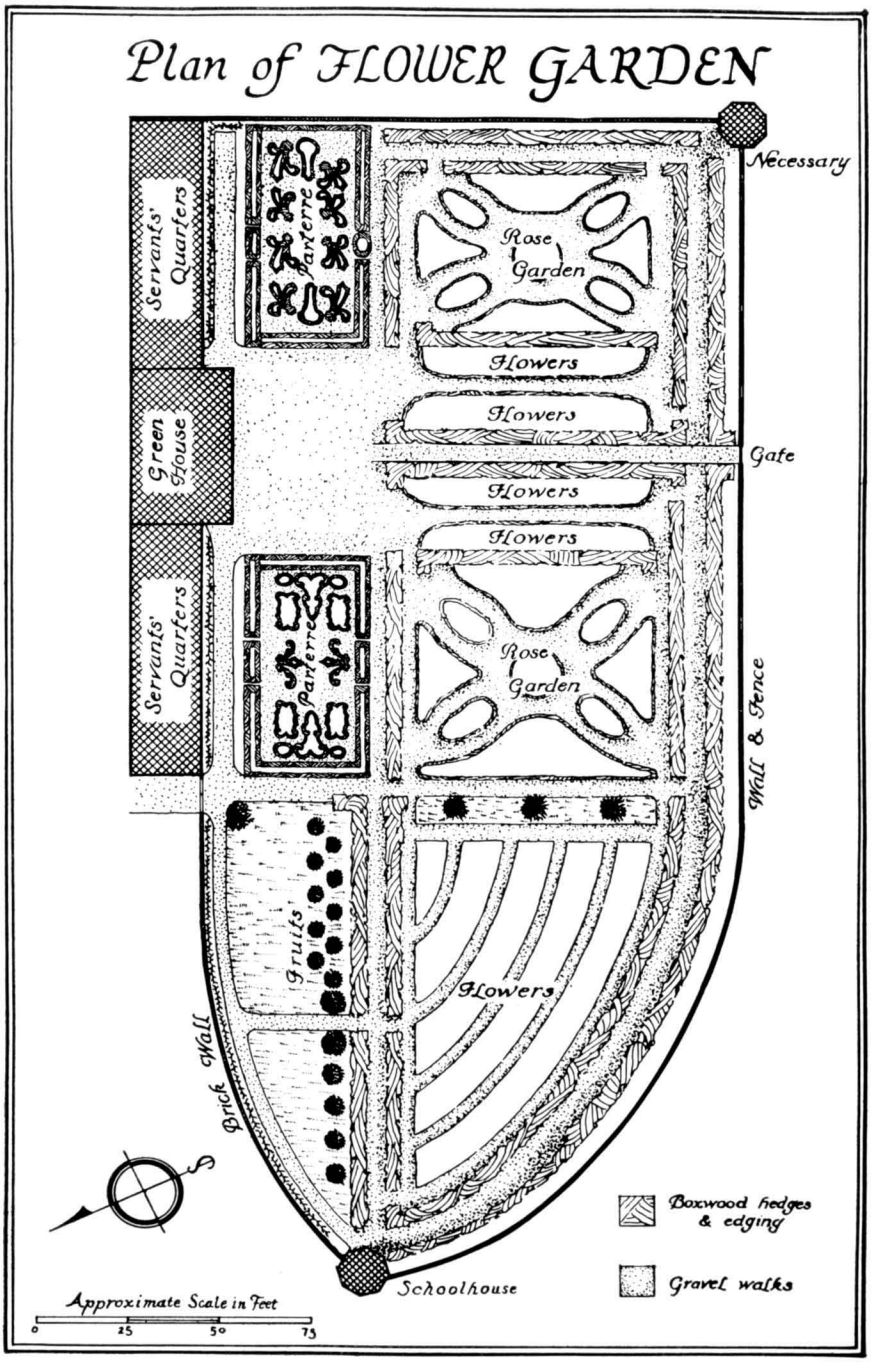
JULY 1962

The Boxwood Bulletin

A QUARTERLY DEVOTED TO MAN'S OLDEST GARDEN ORNAMENTAL



Boxwood Borders at Mount Vernon

Boyce, Virginia

Vol. 2, No. 1

Please address all communications, including manuscripts and change of address to the Boxwood Bulletin, Boyce, Va.

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. It is requested that every item of such material carry the name and return address of the sender and be accompanied by an addressed envelope carrying the proper postage for return. 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.

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The Boxwood Bulletin

July 1962 Vol. 2, No. 1

CONTENTS

FRONT COVER

The diagram on the front cover accompanies the article on "The Mount Vernon Boxwood," appearing in reprinted form on pages 2, 3, and 4 of this issue. In this diagram may be noted the indicated boxwood hedges and edging occurring in and around the Mount Vernon Flower Garden. The Boxwood Bulletin is glad to be able to make the information concerning the Mount Vernon boxwood available to its readers. We are indebted to The Mount Vernon Ladies' Association for the loan of the plate for the front cover illustration, as well as for permission to reprint the informative article from their 1954 Annual Report, and for the loan of the plate of the photograph on page 3.

A MESSAGE FROM THE PRESIDENT

June 27, 1962

To Members of The American Boxwood Society

At the Annual Meeting on May 1, 1962, the Society was good enough to elect me President for the coming year. I hope I shall be able to do a reasonably good job, although my technical qualifications are not impressive but with your support and the help and guidance of Dr. Flory and our other highly qualified experts, there is no reason why we cannot give the Society another year of dynamic growth and usefulness.

The interest the Society is arousing, and the increase in membership, are truly gratifying. At the present writing we have 474 members, including two Life Memberships. Every mail brings additional membership applications to the Headquarters at Blandy Experimental Farm, Boyce, Virginia; and so by the time this article reaches print we should have increased our list considerably above the 474 figure. It is a matter of great satisfaction that nearly all the membership cards received list names of other persons who might be interested in the Society, and that many of these persons subsequently join our ranks.

Dr. Flory has plans to make the Bulletin increasingly useful and interesting. Under his guidance, and with our many talented contributors with high professional qualifications, we may expect to see the Bulletin attain an eminent standing in horticultural literature. Though it is our aim to make the Bulletin a recognized scientific publication, we also most earnestly wish it to be of interest to the layman; and in particular a medium through which the members of the Society may express views, communicate ideas, and ask questions and give answers. To that end we hope that The Letter Box will become increasingly well patronized by all our members.

Our Constitution calls for an Executive Committee composed of the president, secretary, treasurer, and two other members, who are as follows:

Neill Phillips, President, Upperville, Va.
Mrs. Clay B. Carr, Secretary, Boyce, Va.
Walter S. Flory, Treasurer, Boyce, Va.
Mrs. Thomas De Lashmutt, Member, Aldie, Va.
Mrs. Orme Wilson, Member, Boyce, Va.

Our Constitution also calls for a Membership Committee of three, appointed by the president, to investigate the suitability of candidates for membership, and "To vote upon their nomination for consideration by the members at the next meeting." This latter requirement, for the members to vote on admission of candidates, is a recognized procedure for many organizations which hold frequent meetings (once a month, or once a quarter, for instance). But in the case of our Society, which holds a meeting only once a year, it seems to me that perhaps we should be giving thought to some amendment to this provision, since it might mean that an applicant would have to wait many months, or even a year, before being admitted. For convenience and efficiency of operation, the Membership Committee at present consists of the president, secretary, and treasurer.

Though we hold a general meeting of our Society only once a year, all members and prospective members, and other persons interested in the Society and its aims are cordially invited to visit our headquarters at The Orland E. White Research Arboretum of The Blandy Experimental Farm at Boyce, Virginia, at any time mutually convenient to them and to Dr. Flory. I also extend a cordial invitation to all members to visit my home, Heronwood, Upperville, Va., since it is my hope to have the pleasure of making many personal acquaintancesships among our members.

NEILL PHILLIPS

NEEDED: WM. DALLIMORE'S BOOK

The amount of literature pertaining to boxwood is comparatively small. This is particularly true when we think of the many volumes dealing with roses, with lilies, and with many of our other prized groups of plants. Articles in numbers 2 (pp. 23-24) and 3 (pp. 36-40) of Volume 1 of The Boxwood Bulletin listed, or suggested, much of the known literature dealing with boxwood.

Quite a good proportion of the known literature on boxwood is available in book, journal or bibliofilm form in the library of The Blandy Experimental Farm, where The American Boxwood Society has its headquarters. One especially important work dealing with boxwood is missing, however, from the Blandy collection. This is the book entitled "Holly, Yew and Box" written by Wm. Dallimore and published by John Lane of London, England, in 1908.

The Alderman Library of the University of Virginia has been seeking this book for Blandy for a number of years. Second hand book lists are eagerly scanned as they appear. Still, after many months of patient searching, a source for this much desired book continues to be elusive.

If any member of The American Boxwood Society can suggest a source, or furnish a clue to where a copy of this book may be procured, please send the information along to Society headquarters at Box 85, Boyce, Virginia. Perhaps our society should have a "Roll of Honor," and if so the person enabling us to run down an available copy of Dallimore's work should certainly have his name inscribed thereon.

THANKS TO THE MEMBERSHIP

The officers of your society are most grateful for the promptness with which the membership has responded to the call for dues for this second year of the Society. Actually, many members had forwarded dues before the due notices were mailed. Soon after the requests were mailed, about June 15, the answering checks started coming in, and they are continuing to arrive.

Equally as encouraging, a great many of the replies list one or more potential new members, and in some cases checks have included gift memberships to persons suggested for membership. These actions will insure that our new organization continues to grow and develop.

THE MOUNT VERNON BOXWOOD

(*Reprinted with permission from The Mount Vernon Ladies' Association Annual Report for* 1954)

Boxwood is the one type of plant material most frequently associated with the Mount Vernon gardens. This ornamental evergreen was extensively utilized in colonial gardens from a very early period. It was grown for centuries in European gardens and was brought into North America about 1652, when it is known to have been planted on Long Island. The dwarf box was used in the colonies, from Boston to the Carolinas, as an edging plant. John Custis, father of Martha Washington's first husband, was growing boxwood in Williamsburg as early as 1726. The dwarf plant is commonly known today as "English box"; early colonists knew it as "Dutch box." General Washington could have seen it in the gardens at Williamsburg, Annapolis, New York and elsewhere as he travelled through the more settled parts of the colonies.

The first documentary references to boxwood at Mount Vernon are found in the annals for the year 1785. The master of Mount Vernon was then free to give personal supervision to structural improvements and landscape developments which he had commenced ten years earlier, an extensive program which had been carried haltingly forward during his long absence from home. Many of his friends, former companions-in-arms and even unknown admirers, who had learned of his planting plan and his interest in ornamental plant materials, began about this time to send or offer seeds, divisions, scions and plants for the embellishment of the Mount Vernon gardens and grounds. Prominent among these benefactors was Colonel Henry Lee, Jr., "Light-Horse Harry," the brilliant cavalry officer of the Revolution. Lee's letter of March 12, 1785 from Stratford is self-explanatory:

"My dear Genl.

Apprehending the escape of the season before your vessel may arrive, I have got the favor of Mr. Hall to permit his servant to call at Mount Vernon.

He has twelve horsechestnut, twelve box cuttings & twelve dwarf box cuttings. You may have any supply of either box you please to order. I can supply you also with cypress & holly which can be ready at the shortest notice. Perhaps we may have some fruit trees you may want. In any thing please to command me, as I feel singularly happy in administering to the wishes of a character I so much love and respect.

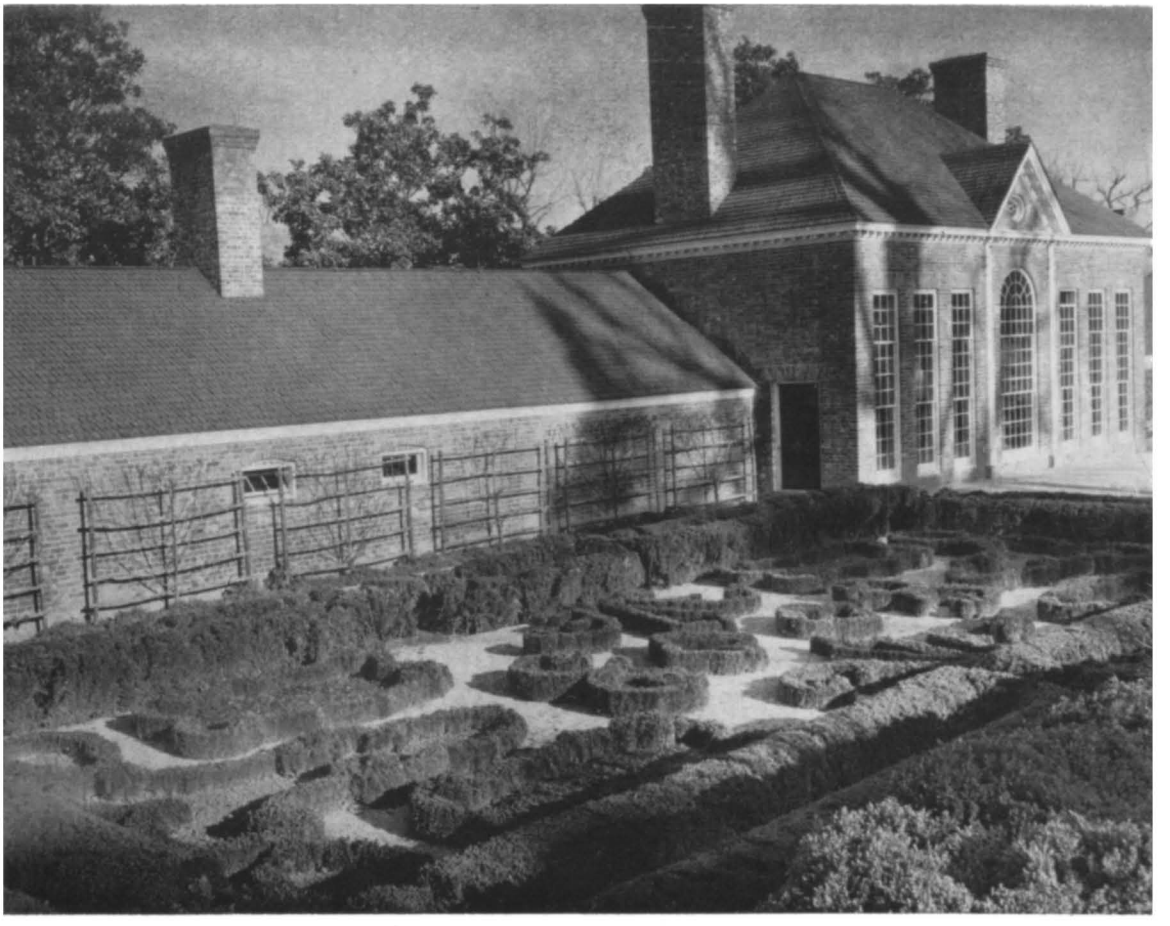
Mrs. Lee joins
in compliments to your lady,
I am dear Genl,
unalterably your
friend and servant
HENRY LEE, JUNR."

Since there is definite identification of tree box, *Buxus sempervirens arborescens,* and dwarf box, *Buxus sempervirens suffruticosa,* in the above letter and since this is the earliest specific reference to box or boxwood in the domestic sources, these cuttings are assumed to be the forbears of the existing plantings at Mount Vernon. Just a month after Colonel Lee wrote this letter, General Washington noted receipt of the trees and the box cuttings in his diary. He observed that they were very dry and appeared to have been "some time out of the ground." The wording quoted would indicate that they were rooted cuttings. Four of the tree box cuttings were planted in the shrubberies bordering the west lawn or "Bowling Green," two on the north side and two on the south, in conformity with the symmetrical planting plan being followed along the margins of this handsome grass plot. The remainder of the plants were set out in a nursery area.

Seventeen eighty-five was a year of drought and early in May General Washington noted that there were "little signs of shooting" among the box plants sent by Colonel Lee. The diary for the remainder of the year contains no further reference to these plants. In March, 1786, several more tree box cuttings "from Colonel Lee" were reported as having been set out in the shrubberies. These plants may have been removed from the nursery, or they could have been included in a new shipment of trees from Colonel Lee on which General Washington paid a small charge for freight in January of that year.

There are today three large boxwood trees on the south side of the Bowling Green in the general area indicated by General Washington's planting notations of 1785 and 1786. Each of these trees is large enough to have been planted in either year. There are no boxwood trees on the north side; here the plantings are presumed to have failed. One of the three surviving trees on the south side of the lawn is twenty feet tall; it has not grown appreciably since 1917. This is a multiple-stemmed plant and one of the stems shows on annual ring count of one hundred and twenty-three years at ten feet above the ground. This tree would be an outstanding specimen in any ornamental planting. At Mount Vernon it ranks first, historically and sentimentally, among the diminishing number of living links with George Washington which still survive in the planted areas about the mansion house. The other two trees are of comparable height, but they are single-stemmed specimens and present a smaller appearance. All of these plants have distinctly pendulous branches borne on erect stems. Because of this characteristic the plants are sometimes identified as "weeping box," but the late Professor Charles Sprague Sargent, of the Arnold Arboretum, identified them simply as *Buxus sempervirens arborescens.*

From 1765 until his death in 1799 General Washington employed a succession of professional gardeners. In most instances these men had served apprenticeships in the British Isles or on the continent and came to Mount Vernon under the customary articles of indenture. Through the years, as the master's interest developed and the formal planted areas became more extensive, the gardener's responsibilities grew. In addition to the enclosed gardens and the adjacent formal areas his work force cultivated a large nursery and orchard. In 1789 a commodious greenhouse was added to the gardener's province. Although these men were working gardeners it is apparent from the record that they were



BOXWOOD PARTERRE in the Mount Vernon Flower Garden. After methodical study of the original planting designs revealed the root positions, this parterre has recently been replanted.

expected to be competent in all phases of horticulture and were granted a considerable degree of discretion. After the Revolution the gardener normally had a staff of three men to assist him. In 1788 an experienced gardener was obtained direct from Germany. This man, John Christian Ehler, proved to be industrious and sober. The evidence is circumstantial only, but it indicates that Ehler carried forward a program of boxwood culture and propagation which made available a sufficient quantity of rooted cuttings to edge the beds in the flower garden and to plant a parterre or parterres. These features are noted in the journal of a young English visitor, Benjamin Latrobe, who was later to attain eminence as one of the new Republic's first architects. Latrobe was acquainted with the great estates of the old world and had studied design. His observations, though brief, afford the only specific description of the flower garden during General Washington's lifetime which has come to light. Under date of July 16, 1796 he wrote:

> "On one side of this lawn is a plain kitchen garden, on the other a neat flower garden laid out in squares, and boxed with great precision. Along the north wall of this garden is a plain greenhouse. The plants were arranged in front and contained nothing very rare, nor were they numerous. For the first time since I left Germany I saw here a parterre clipped and trimmed with infinite care into the form of a richly flourished fleur-de-lis, the expiring groans, I hope, of our grandfathers' pedantry."

After 1785 the gardener and all of the other overseers employed at Mount Vernon were required to submit detailed weekly work reports. Unfortunately, few of these documents have survived and the gardener's reports still extant seldom identify the plant materials which were established in the flower garden. An entry for the week of March 24, 1798 may refer to boxwood; it reads, "Digging and planting hedge around the garden." The only specific mention of boxwood is found in the report for the week of November 10, 1798; this reads, "Digging and planting box edging in the High Garden [Flower Garden]."

These few brief references compose the record of the establishment of the boxwood hedges and parterres in the flower garden. References to the boxwood are equally rare during the long period of years between 1799, when George Washington died, and 1859, when the Association took possession of Mount Vernon. In 1830 a visitor noted that the garden was preserved "in tolerable order." Eleven years later another visitor observed "Flower beds quaintly laid out, and guarded with borders of unpruned box, as it had been in Washington's time." Four years later another visitor wrote:

> "From the house we passed to the garden. This is enclosed by a brick wall built under the direction of Washington himself, and is tastefully laid out in various geometrical figures, all bordered with boxwood. Within these beds are flowers of almost every description, many of which are in bloom in the month of April."

These reports, though brief and casual, indicate that the boxwood edgings planted by General Washington's gardeners had survived and were showing promise of the hedge proportions they would later assume.

The parterres, which flanked the greenhouse on either side, were not permitted to completely outgrow their intended function. In 1916 Louisa Fontaine Washington (Mrs. Roger P. Chew, 1844-1927) daughter of the last private owner of Mount Vernon, wrote, in response to an inquiry:

> "I have certainly always been under the impression that most of the box at Mt. Vernon was planted under Gen. Washington's direction and from its size when I first remember it (some 67 or 8 years ago) I am convinced it was planted at that time. Now the small borders on each side of the open space in front of the old greenhouse were certainly not planted during the General's life. About 1854 or 55 the box having grown so large as to shade the flowers it was all taken up and reset — cuttings being taken from the original plants."

It may be assumed that this parterre replanting was trimmed more regularly and effectively than the original, but even with the most rigorous clipping a gradual development is inevitable and during the last seven years this second planting has been replaced. Replanting was preceded by careful plotting of the root positions of the existing plants and these patterns in turn were compared with designs for parterres in an 18th century garden book. This study revealed a convincing identity of the patterns with conventional design motifs in the old volume. Comparison indicated, in fact, that the fleur-de-lis motif had been a feature of each parterre. The replanting which followed this methodical study has thus restored an obscured planting design of George Washington's German gardener which a young Englishman thought so outmoded in 1796.

By 1884 the hedges in the flower garden had attained considerable size, probably averaging three and one-half or four feet in height. They were encroaching on flower beds and garden paths, competing ever more vigorously for nutriment and moisture from the soil. Official correspondence indicates that a regular practice of top and side clipping was begun at this time to keep the hedges within reasonable bounds. In 1899 a heavy snow damaged the old hedges which border the center walk in the kitchen garden, necessitating a cut-back nearly to ground level along the greater portion of the walk. The broken plants made a good recovery and at the present time only the greater height of the unbroken plants recalls the incident. These hedges are believed to be contemporary with those in the other garden. In 1936, following seasons of extreme winter weather and severe summer drought, the hedges showed evidence of decreased vigor. A special feeding program was carried out and regular yearly clipping was discontinued; the plants have responded well. The hedges now average five and one-half feet in height and their continued growth is slowly narrowing the garden paths they border. This trend can be controlled to some extent by localized clipping, but it is possible that in time some of these paths will be arched by box.

Each year the hedges afford as many as twenty thousand cuttings for propagation. This form of pruning has been found to be beneficial to the parent plants, encouraging penetration of light and air by reducing the surface density of the foliage. It may also help to keep the hedges in bounds by diminishing the rate of growth. The rooted plants developed from these cuttings find a ready market. The supply has never yet equalled the demands of visitors who would carry home with them a living souvenir of Mount Vernon.

It is interesting to compare the Mount Vernon hedges in their maturity with those first feeble cuttings, the gift of an admiring friend, which George Washington nurtured and established in his gardens at a time when this country was young and feeble. Their growth has kept pace with the growth of a nation. As their rooted scions are established in unnumbered gardens throughout the land, there perhaps to proliferate in turn, they seem to partake of that immortality which we would wish for the nation itself.

OUR BOXWOOD GAVEL AND BLOCK

Presented by Professor A. G. Smith, Jr.

Professor A. G. Smith, Jr., one of our Honorary Life Members, presented the Society with a handsome gavel set made from boxwood during the May 1, 1962 Annual Meeting.

The gavel was turned for Mr. Smith by Mr. Gerald Allard, Gardener at Stratford Hall. The block is approximately 2 x 3 x 8 inches in size. Carefully sanded and polished, the surfaces are satiny smooth. More than sixty growth rings may be counted in the block's cross section. The set is surprisingly heavy, suggesting that the wood has a comparatively high specific gravity.

The weight of the wood could be realized even more readily from a polished 2 x 4 inch piece several feet in length, made from the same boxwood tree, which Professor Smith had on exhibit at the May 1 meeting.

Professor Smith's interesting account of his knowledge of the history of the plant from which the gavel set came appears below:

> "In 1936 I was called to Lovingston, Virginia, to examine what was thought to be a diseased boxwood tree. I found that all of the roots on one side of the tree had been cut when a ditch was dug for drainage or to widen the street. The tree later died.
>
> "Some months later, when going through Lovingston from Charlottesville, I stopped where the tree had grown and found someone sawing the tree up for wood. I asked if I might have a piece of the trunk; and was given a section about 3 feet long and 9 inches in diameter at the largest end. I have kept this piece of box-

(Continued on Page 12)

A Study of Boxwood Decline in Maryland

J. B. Wilson
Dept. of Botany, University of Maryland

During the past ten years, there have been an increasing number of boxwood plantings in Maryland affected by a "decline" disease. The disease is most severe on *Buxus sempervirens* var. *suffruticosa* and affects plants of all ages. In Maryland the problem is centered on the Eastern Shore, but boxwood in other areas of the state are also affected.

The symptoms of the decline vary, but in general, there is a loss of color in definite areas of the plant, usually at the terminal of a branch. The foliage exhibits a change in color, usually from a light-green to bronze or gray-green, then changes to a straw color. This discolorization results in the death of entire branches, generally in the apical and middle portion of the crown. The death of the entire plant generally follows.

Since Golden (1,2,3) had previously reported the pathogenicity of spiral nematodes on boxwood, it appeared that these nematodes might be involved in the decline of boxwood. The fungus *Phytophthora cinnamomi,* because of similar diseases caused by the fungus on other woody ornamentals, was a prime suspect as the causal organism alone or in association with nematodes in a disease complex. With this in mind a survey was made of the boxwood in Maryland to determine the extent of the disease, as well as to attempt isolations of associated fungi, and to determine the nematode populations associated with the host plant.

Although Haasis (4) at North Carolina State has recently reported *Phytophthora parasitica* as a pathogen on boxwood, no *Phytophthora* has been isolated from boxwood in Maryland. However, a species of *Fusarium* was isolated; but it was found to be non-pathogenic to boxwood. Parasitic nematode species associated with boxwood in Maryland are given in Table 1.

In addition to the survey, field studies were initiated in three established boxwood plantings, "Wye Plantation" and "Prospect Plantation" on the Eastern Shore, and at "The Mill" in northern Maryland, in an attempt to control the disease. The effect of fertilization, nematicides, irrigation, drainage, and winter protection on decline was investigated.

Fertilization trials were conducted using 5-10-10 inorganic fertilizer, 5-10-10 fertilizer in a mixture containing a granular formulation of Nemagon (or applied with other nemagon formulations). These plots were compared with Nemagon (1,2-dibromo-3-chloropropane) applied without fertilizer. The Nemagon was applied as a 10% granular, and as a 67% emulsifiable liquid material. The results of these tests indicated that the fertilizer alone, or the fertilizer-nematicide applications, are more beneficial than the nematicide alone (Table 2). The conclusions from these tests were that fertilization or lack of fertilization plays an important role in decline. However, the nematicides were effective in reducing nematode populations. Yearly spring and late summer applications of Nemagon during the past three years has completely eliminated parasitic species of nematodes in the boxwood planting at "the Mill".

Water was found to be a deciding factor in the display of decline symptoms whether it be from a deficiency during extended dry periods or in excess in poor, drained areas. Water deficiency not only injures the plant directly but predisposes it to nematode injury, winter injury, or possible fungus and insect damage. Excessive water due to overwatering in heavy soils or in poorly drained locations can cause the death of the plant or predispose the plant to other pathogenic or non-pathogenic damage. The result of controlled greenhouse drainage tests are shown in figure 1.

Winter injury also plays a major role in the decline of boxwood in Maryland. Severe winter injury alone may kill the plant or weaken it thereby rendering it more susceptible to nematodes, fungi, insects, or drought injury. Winter protection tests have proven the value of such protection to boxwood in the state (5).

CONCLUSIONS

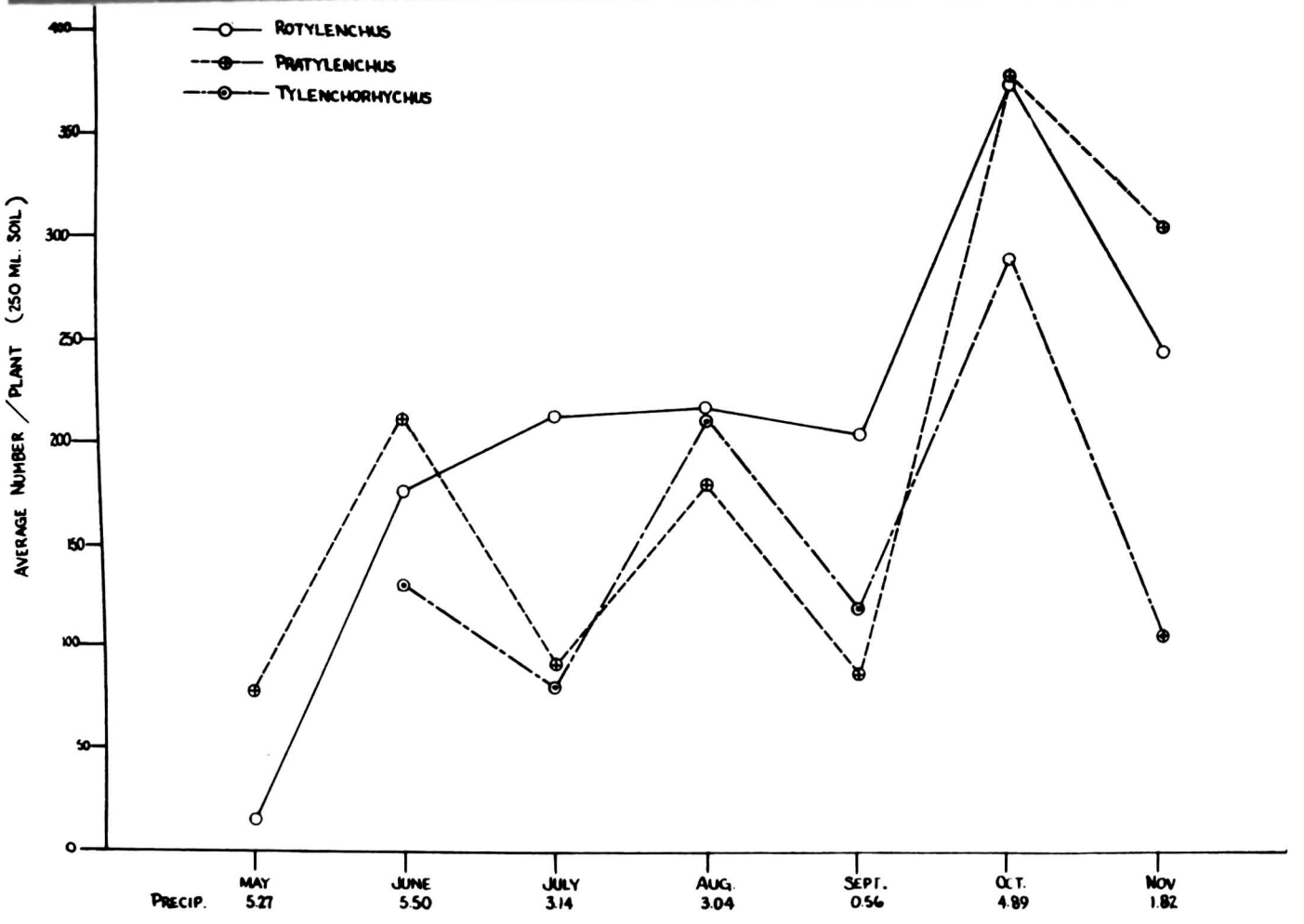
The study of boxwood decline at the University of Maryland has shown that the problem in the state is a complex condition in which cultural practices, environment, and plant parasitic nematodes (and possible parasitic fungi) are involved.

Conditions common in Maryland which are detrimental to good boxwood culture are:

(1) Hot, dry conditions during the summer. These conditions are especially severe on plantings in the full sun and in light soils.
(2) Low temperatures, snow, and wind damage particularly in exposed plantings.
(3) Poor drainage in heavy soils or in low areas.
(4) High nematode populations. Whereas it is unlikely that nematodes alone will kill a large boxwood plant they can nonetheless provide the coup de grace when plants are weakened by the above mentioned conditions.

Recommendations for controlling boxwood decline:

1 — Irrigate by soil soaking during dry periods in the growing season. Slacken off watering toward the end of the season.
2 — Do not plant boxwood in poorly drained soil or in low undrained areas. In addition to the direct damage from excessive water, the wet conditions are favorable to *Phytophthora* build-up and infection.
3 — Protect exposed plants from drying winter winds and snow damage with anti-transpirants, screens, and frames.
4 — Two species of fungi, *Volutella buxi,* and *Macrophoma candollei,* are weak parasites commonly found on declining plant parts. Eliminate these fungi by cleaning the debris from the plant interiors. This practice will not only eliminate the fungi but will also improve aeration in the plant interior which results in a more healthy growth in this region of the plant. A strong stream of water will usually remove the accumulated leaves. A good fungicide, such as the fixed coppers, applied to the interior will also help eliminate the fungi. Complete coverage is necessary for good control.
5 — Fertilize regularly with a balanced fertilizer. Many of the boxwood problems can be over-


ROTYLENCHUS
PRATYLENCHUS
TYLENCHORHYCHUS
AVERAGE NUMBER / PLANT (250 ML. SOIL)
400
350
300
250
200
150
100
50
0
PRECIP.
MAY 5.27
JUNE 5.50
JULY 3.14
AUG. 3.04
SEPT. 0.56
OCT. 4.89
NOV 1.82

come by the use of a fast acting inorganic fertilizer such as 5-10-10 fertilizer which gave good results in these tests.

6 — Apply a nematocide if nematodes are found to be present in high populations. Fluctuations of nematode populations make it difficult to determine the extent of the nematode problem (figure 2). It is best to take soil samples at different times during the season. Nemagon or Fumazone are recommended for the control of nematodes.

Table 1. Parasitic nematodes commonly associated with boxwood in Maryland.

Scientific Name	*Common Name*
Helicotylenchus multicinctus	Spiral Nematode
Hemicycliophora sp.	Sheath Nematode
Hoplolaimus coranatus	Crown-Headed Lance Nematode
Hoplolaimus uniformis	Lance Nematode
Paratylenchus spp.	Pin Nematode
Pratylenchus penetrans	Lesion Nematode
Pratylenchus pratensis	Lesion Nematode
Rotylenchus buxophilus	Boxwood Spiral Nematode
Trichodorus parvus	Stubby-Root Nematode
Trichodorus porosus	Stubby-Root Nematode
Trichodorus primativus	Stubby-Root Nematode
Tylenchorhynchus claytoni	Tobacco Stunt Nematode
Tylenchorhynchus dubius	Stunt Nematode
Xiphenema americanum	American Dagger Nematode
Xiphenema diversicaudatum	Dagger Nematode

Other observations

Boxwood growing in partial shade are more vigorous than those planted in full sun. Plants along walls, walks and driveways are often scorched by the intense heat reflections from the concrete, black-top or brick surfaces. Plants growing in areas of high afternoon shade are more vigorous. Plants growing on high banks which are exposed to the afternoon sun are less vigorous. This is probably caused by excessive soil temperatures and a drying of shallow roots. A mulch would probably help under these conditions.

Table 2. The effect of nemagon — fertilization treatments of boxwood.
Prospect Plantation, Queen Anne's Co. 1959.

Treatment	Index reading*	Aver. new growth**
Nemagon, 10% granular	2	3.01cm.
5-10-10 fertilizer	1	4.06
Nemagon, (10% granular)-(5-10-10) fertilizer Mix	0	4.42
Check	3	2.17

* Rated on basis of foliage affected: 0 = none affected, 1 = 1-25% affected, 2 = 26-50% affected, 3 = 51-75% affected, 4 = 75-100% affected.

** 10 measurements per plant, 10 plants per treatment measured.

Deep planted boxwood or plants which are heavily mulched display a death of the lower roots. The root area is not only reduced but shallow roots, especially those in the mulch, may dry out and cause the decline or death of the plant.

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FIGURES *(Page 6)*

1—(above). Effect of poor drainage on boxwood. Left: well-drained soil, Right: poorly drained soil. Note bleaching of leaves.

2—(below). The fluctuation of nematode populations on *Buxus sempervirens* var. *suffruticosa*. 1961.

Some Facts About Keeping Boxwood Healthy

HOWARD R. GARRISS

(Reprint of an unpublished mimeograph on file in U. S. D. A. National Agricultural Library; undated but received by that library October 26, 1943.)

For centuries the box bush has been highly prized for the grace and beauty it has added to gardens both public and private. Its wholesome evergreen growth, longevity of life, and relative freedom from diseases have boosted its popularity until it is among the most frequently cultivated ornamental shrubs. Unfortunately, many people, in recent years, have been quite discouraged over the failure of their bushes to thrive as they expected them to and much financial loss has resulted from weakened and dying plants, attributed to fungous diseases.

The most dangerous parasite of both tree box and dwarf box is a fungus that causes twig blight and canker. In severe cases it not only attacks the young twigs but larger branches and the trunk. The first symptoms noticed will be that certain branches or certain bushes do not start growth as early in the spring as others and the growth that finally does take place is not as vigorous as that on healthy plants. The following spring these same infected branches may be dead, the leaves becoming a straw yellow. At this time, a close examination at the bases of infested twigs will disclose loose bark which readily peels off from the wood. The woody tissue at these areas shows a greyish to blackish discoloration. On the surface of dead twigs and on the under surfaces of dead leaves, small, inconspicuous, salmon pink pustules may be found. These contain the very tiny spores ("seeds") of the parasite and when washed by rain to lower branches or blown by the wind to other plants may cause infection of healthy twigs. New infection also frequently takes place at the bases of small dead shoots or in crotches where dead leaves have been allowed to accumulate.

In order to control the disease described above, dead branches should be removed and the cankers on larger limbs treated by surgical methods. When pruning out the dead twigs care should be taken to cut beyond the discolored wood, back into the healthy tissue so that it is reasonably certain that

all the infected part has been removed. All leaves that have lodged in crotches should be removed annually and burned. Infected plants should be sprayed several times during the season with 4-4-50 Bordeaux mixture or dusted with sulphur. Other control measures include protection from severe cold weather and applications of sufficient fertilizers, since plants weakened by starvation and extreme winter temperatures are more easily attacked by the parasite. The plant is often weakened by red spider and should be dusted with sulphur during drought periods to keep this pest from weakening the plant.

Very frequently it will be noticed that brownish to blackish spots, smaller than pinheads, occur thickly scattered over both the lower and upper surfaces of dead box leaves. These are the fruiting bodies of another fungus which was at first thought to be causing the death of leaves and twigs. However, recent investigation by the writer and other workers indicate that this organism is not a vigorous parasite, but merely grows and fruits on tissue that has been killed by other agents.

Quite often parasites have been unjustly suspected of causing unwholesome conditions of box plants. It should be borne in mind that the practices of proper planting and fertilization are two of the first protective measures against the occurrence of unhealthy plants. Just as one would not expect to win races with a horse not properly fed and sheltered, one should not expect to obtain beauty and charm from box plants that have set without proper regard for the location. In recent years many beautiful plants have been transferred from properly shaded and drained locations to places subjected to either intense sunlight or to a soil type not suitable, or to both.

From the leaves of any normal plant there is a continuous loss of water, especially during the day, and as the temperature rises this loss of water from the plant is increased. Thus, from box plants with hundreds or thousands of leaves, there is a rapid loss of water, particularly during the hot days of spring and summer. Unless this water is replaced by that being absorbed by the roots, the plant cannot function normally. When a plant is dug up and transplanted, there is naturally a certain amount of disturbance of the root system and the rate of water absorption is greatly lowered. If such a plant is subjected to intense sunlight before the new roots are established, the rate of water loss from the leaves will be far above the rate at which water is moving into the roots from the soil. This condition will bring about a wilting and discoloration of leaves and a general weakening of the plant with the result that parasites attack it quite readily.

To avoid losses which would result from plants subjected to the conditions described above, special care should be used in transplanting box bushes. If the place where they are to be set is not naturally shaded, a lath or burlap screen should be fixed over the plants and allowed to remain for two or three years, and even during the summer months and periods of drought for several years thereafter. Do not try to substitute the application of excessive moisture for the practices just described, as a waterlogged soil prevents root development. The soil should be a loamy type which is well drained and aerated, and should be kept moderately moist.

Farmyard manure is one of the best fertilizers to insure healthy growth of box plants. It may be worked into the soil or used as a mulch under the branches. For special stimulation, very light applications of sulphate of ammonia or nitrate of soda may be used. However, special care should be taken not to apply these stimulants late in the season as they may start a late growth that would make the plant subject to freezing injury during the following winter season. It is very important to avoid this cold weather injury as parasites may easily attack plants weakened in this manner.

Applications of these fertilizers are not suggested for the newly set plants except in very small amounts. Rather, the soil to which the plants are to be transferred should be richly prepared a good while before the time of setting. For general fertilization of box the following rank next to farmyard manures: prepared stock-yard manures, cottonseed meal, tankage, dried blood, and ground bone.

Sometimes a blanching of box foliage and often the death of one or more branches in an otherwise healthy crown, may be due to the visits of dogs. Red pepper, sprinkled over the plants and on the ground, has been quite successful as a temporary deterrent. Nicotine sprays also seem to discourage this imposition of box plants.

Frequently, sudden periods of unusually cold weather, following periods suitable for growth activity, cause a mild form of injury which is usually temporary in nature. The leaves in the top of the crown, or on the exposed sides, develop a reddish brown color. This color may persist for several weeks, but ordinarily disappears in vigorous plants with the return of mild weather.

If leaves become more discolored on one side of a plant while the rest of the plant remains normal at least for a while, excessive exposure to the sun or to wind may be suspected. This condition is intensified if the soil is poorly drained. Sometimes temporary flooding of the soil around box plants, as may happen during periods of excessive rainfall, will result in a form of leaf injury, termed sunscald, when the wet period is followed by a sudden hot dry spell. Ordinarily, this form of sunscald is not serious on vigorous plants as the injured foliage is quickly covered with new shoots. However, if the wet soil condition persists, larger portions of the foliage may be affected and result in twig blight and fungous cankers which will make recovery impossible.

For the successful growth of vigorous, disease-free box plants the first consideration should be that of the location in which one expects to set them. Areas at least partially shaded should be selected. It is important to see that the area is well drained and protected from intensely cold winds of winter and hot drying winds of summer. If an area one wishes to beautify is not suitable for the growth of box, other plants more suited to the particular environment should be selected.

In the northern peak of India, 200 miles above Delhi in an area bordered by Pakistan, China, and Nepal boxwood grows in forests upon the south side of the Himalayas.

Winter Injury to Boxwood

Some Contributing Factors

(A talk given by Dr. J. H. Tinga, Department of Horticulture, Virginia Polytechnic Institute, Blacksburg, Virginia, to the American Boxwood Society Meeting at Blandy Experimental Farms, Boyce, Virginia, May 1, 1962.)

There is often no single factor that causes the injury or decline of boxwood but rather the interaction of several factors for a long period of time. I cannot look at a sick boxwood and diagnose the trouble without knowing the history of the plant. In most cases a medical doctor cannot tell you why you are sick without reviewing your recent medical history.

The *first factor* that we will discuss is a basic one — the genetic makeup of the plant. Now in the *genus* Buxus we have several *species* of which three are important in the American garden. Each of these species are divided up into a number of *varieties* such as the variety of *Buxus sempervirens* which has white edges on the leaves. An even finer distinction is the *clone* which is all the rooted cuttings and plants taken from a single mother plant.

We find that two clones or mother plants may be identical in every growth characteristic except how many leaves are damaged in the first frost in the fall. This, then, is a genetic factor and we can easily decrease winter injury by using the plants from the best clones.

The *second factor* is the level of fertility in the soil. Plants with low mineral nutrition which we call starved are more subject to winter injury. On the other hand boxwood that has been over-fertilized may also be weak plants because the strong concentration of fertilizer may have injured the feeder roots. Small frequent feedings are better than large, once-a-year fertilizer application.

The *third factor* is the water supply. The roots operate on a day-to-day schedule. A newly transplanted plant does not respond well to being watered each day for thirty days in March and then neglected the rest of the summer especially during the July drought. Boxwood like many other landscape plants do not like to be flooded or in the desert sand. A July drought may be manifested as winter injury in February of an already weakened plant.

The *fourth factor* is the vigor of the root growth in the growing season. Root pruning, transplanting, excessive cultivation and injury from over fertilizing all make a plant weaker. Temporary lath shade to decrease water loss and to lower soil temperature will result in a plant that will have better root growth and therefore will have less winter injury.

One of the characteristics of the branching pattern of older boxwood is the tendency of one branch to press against another one and to break the cambium layer. This is called *self girdling.* A branch weakened by partial girdling is apt to die after a severe winter. This injury is manifested in large twigs and entire branches turning yellow and red in early spring. These branches can be easily removed by pruning. There is not much that can be done to prevent self girdling. Lath shade in the winter may decrease the injury but it is caused by the growth habit of the plant. In English boxwood this is one of the causes of the uneven shape of the plant and is sometimes considered a desirable characteristic. If the dead branches are left on, the plant is of course not attractive.

Plants can be weakened by nematodes or by insects or by red spiders or by diseases. Weak boxwood may not be injured at all by a mild winter or a southern climate. The same weakened plants may be severely injured by a *hard winter.*

Finally, what are the characteristics of the winter which makes it a hard winter on Boxwood plants. *First* — the rate of drop of temperature. A mild fall followed by 20 degrees results in what we call the Thanksgiving Burn of new shoot growth. *Second* — the length of time that the top or root of the plant are exposed to zero degrees. Twelve hours may produce no injury while seven days at zero may kill the plant. *Third* — the dryness of the soil and the dryness of the winter wind may cause boxwood to die from *winter drought,* rather than from low temperature. A dry summer followed by a dry winter is especially injurious. *Fourth* — the snow mulch is desirable because it keeps the roots warmer and wetter than no snow. *Fifth* — a wet snow can produce much injury. It opens up the top of the plant by bending branches. This subjects the larger inner branches to sun-scald and splitting bark. We have observed 10 foot plants which were injured by snow-sun-scald in February 1958. Branches were dying as late as August 1959 (18 months later). No injury was manifested until the first hot day in May. This was the result of a single wet snow.

Boxwood are slow growing and slow responding plants. When they are sick, they need the secret ingredient, T. L. C. (tender loving care), to which we all respond. To give this treatment we should know the recent history of the plant and shield it from the harshness of the plant environment.

Example of some contributing factors working together against a plant. 1. Wrong variety — 50% of trouble; 2. Low fertility — 20% of trouble; 3. Four days at zero degrees — 30% of trouble. Result dead plant. Causes — three.

The Garden Club of America, in 1960, had 104 member clubs in 38 States and the District of Columbia. Of these the largest number, 21, were in New York State. The muster of member clubs in other States was as follows: Connecticut 14; New Jersey 11; Virginia and Pennsylvania 10 each; Maryland and Massachusetts 9 each; Ohio and Illinois 7 each; California 6; Tennessee 5; Georgia, Texas, and the District of Columbia 4 each; Florida, Kentucky, Mississippi, and Rhode Island 3 each; Alabama, Louisiana, South Carolina, North Carolina, Colorado, Iowa, Minnesota, Missouri, Michigan, and Maine 2 each; and Arkansas, Delaware, Hawaii, Indiana, Wisconsin, Oregon, Washington, New Hampshire, Vermont, West Virginia, and Kansas one each.

Phytophthora Parasitica, The Cause of Root Rot, Canker, and Blight

FRANK A. HAASIS, *North Carolina State College*

(*Contribution from Plant Pathology, North Carolina Agricultural Experiment Station, Raleigh; published with the approval of the Director of Research as Paper No.* 1279 *of the Journal Series. Reprinted here from PHYTOPATHOLOGY* 51: 734-736, 1961 — *with permission of author and editor.*)

A disease of boxwood (*Buxus sempervirens* L.) was encountered frequently in North Carolina during 1959 and 1960. A similar disease has been referred to as "wilt and canker" and has occurred for many years in the middle-Atlantic and southeastern United States. Weiss and St. George (2) recognized wilt and canker as different symptoms of the same disease syndrome and suggested that these symptoms result from freezing injury. Although *Volutella buxi* (D.C. ex Fr.) Berk. & Br. and *Verticillium buxi* (Lk.) Auers. & Fleischhack were characteristically associated with the disease, they concluded that these organisms are not the primary parasites but are secondary invaders affecting boxwood after it has been injured by freezing.

Although Andrus (1) isolated *Phytophthora parasitica* Dastur from boxwood in Maryland in 1933 and suggested its potential importance as a pathogen, he did not associate the fungus with any disease of boxwood. In the past 2 years, *P. parasitica* has been isolated consistently from plants having canker and blight symptoms. The objective of this investigation was to determine the relationship of *P. parasitica* to root rot, stem canker, and blight of boxwood.

Methods. — Isolations were made by inserting tissues from infected plants into apples and plating subsequently infected apple tissue on water agar. Inoculum was grown on sterilized oats at 28°C for at least 10 days or on corn-meal or oatmeal agar in petri dishes at room temperature for 7 days.

Most inoculations were made by adding the fungus, grown on sterile oat grains, to the rhizosphere of potted boxwood plants or to pasteurized soil subsequently used for potting rooted cuttings of boxwood. In some inoculations, 1 cm^2 of mycelium from oatmeal or corn-meal agar was applied to wounded or non-wounded stem surfaces of healthy boxwood plants and held in place with moistened, sterile cotton wrapped with cellophane. Noninoculated plants served as controls. Plants were kept in the greenhouse with night temperatures of 24-27°C and day temperatures of 31-38°C. Additional tests included comparisons of 3 isolates of *P. parasitica* with and without the root-knot nematode *Meloidogyne javanica* (Treub) Chitwood. The nematode inoculum consisted of a mixture of infested soil and infected tomato roots. Approximately 200 g of inoculum were added to each of twelve 10-in. pots containing a boxwood plant.

Results. — *P. parasitica* inoculated in wounded and nonwounded stems of English and American varieties of boxwood produced infections in 7-10 days and stem cankers after approximately 1 month; blight symptoms appeared 30-90 days after inoculation. *P. parasitica* was reisolated from 1 to 6 infected plants 45 days after inoculation, the other plants yielded 1 or more species of *Fusarium, Trichoderma, Penicillium,* or *Gliocladium.* Control plants remained healthy.

Studies on the interaction of *P. parasitica* and *M. javanica* indicated that *M. javanica* did not increase disease severity. Although substantial numbers of root-knot larvae colonized the roots of boxwood plants not inoculated with *P. parasitica,* colonization was inhibited in the presence of the fungus. Since *P. parasitica* caused a severe root rot, healthy root tissue essential for the development of the nematodes was limited. Three months after inoculation, 7 of 18 plants inoculated with *P. parasitica* showed canker and blight symptoms. The time required for the appearance of blight symptoms was 50-88 days (Table 1); no record was made of the appearance of canker symptoms. Wounds in stems or roots were not necessary for infection since there was no significant difference in numbers of infected plants, or in infection rate, with or without mechanical injuries to stems or injuries made by nematodes in the roots. One isolate of *P. parasitica* induced stem cankers and blight when inoculated in stems of healthy boxwood, but failed to induce these symptoms after 5 months in inoculated roots of similar plants. By contrast, other isolates of *P. parasitica* induced canker and blight when inoculated in roots; stem inoculations were not attempted with these latter isolates. Root rot was more severe with the latter isolates.

Five isolates of *P. parasitica* were tested for pathogenicity to rooted cuttings of American and Japanese boxwood. Root rot developed rapidly and 17 days after inoculation *P. parasitica* was recovered from 14 of 18 inoculated plants. Each of the 5 isolates was recovered 1 or more times. *P. parasitica* was not recovered from 3 control plants.

Table 1. Results of inoculations of English boxwood roots with *Phytophthora parasitica and Meloidogyne javanica*

Inoculum		No. of nematode larvae recovered from 30 roots, 1 month after inoculation	No. of plants yielding *P. parasitica* 30 days after inoculation/no. inoculated	No. of plants with blight symptoms	Range in days for development of blight symptoms
P. parasitica	*M. javanica*				
PE-1	+	28	3/3	0	
	—	0	3/3	0	
1A-8	+	10	3/3	1	54
	—	11[a]	3/3	2	51-60
3A-23	+	0	3/3	3	51-88
	—	0	3/3	1	50
None	+	112	0/3	0	
	—	0	0/3	0	

[a] Unexplained contamination.

Symptoms. — The first obvious symptoms of the disease are loss of luster and a simultaneous color change in the foliage from dark to light green. In quick succession, the leaf is inclined upward and the lateral margins roll inward as a result of desiccation. Finally, the leaf is bleached to a light straw color. One or more branches, or the whole plant, may develop these symptoms. The bark at the base of affected branches dies and with desiccation it separates from the wood and may be removed easily. Frequently, a thin layer of dead tissue appears in the cambial region. After 1 month or more, the xylem usually becomes superficially darkened. Root rot precedes the development of symptoms in foliage and branches.

Discussion. — Boxwood plants infected with *P. parasitica* often develop symptoms that are indistinguishable from symptoms of the "wilt and canker" disease of boxwood which is considered caused by freezing injury of unhardened wood or unseasonably active cambium. Similarities of the 2 disorders are striking. Stem cankers are present in either case and isolations from diseased tissues, using conventional laboratory media, usually yield *Verticillium buxi* and *Volutella buxi;* species of *Fusarium, Penicillium,* and *Trichoderma* also may be recovered. The sudden desiccation of 1 or more branches, or an entire small plant, resulting in the changing of foliage color from dark green to a pale, straw color is apparently common to both diseases. Whether or not root deterioration is a concomitant of freezing injury is not recorded. Root rot is a symptom, however, of the disease caused by *P. parasitica* and indeed precedes symptoms associated with desiccation of branches and foliage.

It is probable these 2 boxwood disorders exist independently of each other. It is equally probable that, heretofore, the disease caused by *P. parasitica* has been confused with the disorder caused by freezing injury.

The name, *Phytophthora* blight, is proposed for the disease caused by *P. parasitica* thus differentiating it from the similar disorder of boxwood attributable to freezing and referred to as "wilt and canker."

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2. Weiss, F., and R. A. St. George. Culture, diseases, and pests of the box tree. U.S. Dept. Agr. Farmer's Bull. 1855 rev. 21 p.

Second Annual Meeting

About 100 members attended the second Annual Meeting of The American Boxwood Society, held at The Orland E. White Research Arboretum of The Blandy Experimental Farm at Boyce, Virginia, on May 1, 1962. The majority in attendance were from Virginia, Maryland and Washington, D. C., with members also present from Alabama, Arkansas, North Carolina, Connecticut and Pennsylvania.

The morning was devoted to examination of arboretum plantings, specimen plants, greenhouse exhibits and herbarium vouchers of rare boxwood species and varieties, and of literature on boxwood.

After a box lunch featuring Kentucky fried chicken the formal program got under way, moderated by Dr. W. Ralph Singleton, of the University of Virginia, President of the Society. Speakers, with their subjects, were Dr. J. H. Tinga, V.P.I., "Winter Injury to Boxwood"; Mr. C. C. Crabill, Blandy Experimental Farm, "Easy Propagation of Boxwood"; Mr. Karl F. Fischer, Wye Plantation, Maryland, "Boxwood Culture in Germany and America"; Dr. J. T. Baldwin, College of William and Mary, "Boxwood Species and Types"; and Dr. J. B. Wilson, University of Maryland, "Boxwood and Nematodes." The talks are all expected to appear in THE BOXWOOD BULLETIN. At the business period, the secretary's report was given by Mrs. Clay B. Carr of Boyce, and the treasurer's report by W. S. Flory, also of Boyce.

Dr. Tinga's talk appears in its entirety elsewhere in this issue.

Mr. Crabill described a very simple, but efficient and rapid, method of rooting cuttings in large cans closely covered with pliofilm bags. The bag prevents the drying out of the media (usually either vermiculite, or a mixture of sand and peat), and often cuttings are heavily rooted while the media is still moist with the initial watering.

Mr. Fischer made several comparisons of boxwood as grown in Germany and in America. In Germany one does not see the large, old, boxwood common in our country. This is probably due to two factors: (1) the German weather is more conducive to the plant tops being killed back by winter injury; and (2) the common German practice of digging the boxwood plants when they are about 18 inches high, at which time the plants are cut back — both top and root — rather severely and then planted as garden borders. These borders, very common in Germany, thus start out, practically, from little more than cuttings.

Dr. J. T. Baldwin in speaking on "Boxwood," dealt chiefly with species of *Buxus* and especially with varieties of *B. sempervirens*. It was considered that the 80-odd species of *Buxus* listed by *Index Kewensis* really involve no more than 20 or 30 distinct entities. Interesting citations and references were made of original varietal descriptions.

Dr. Wilson described several experimental studies dealing with nematodes on boxwood. Nematode populations were charted from consistent soil samplings taken from March through October. Nematode counts were lower during hot, dry periods, and were highest in October when there was likely to be warmth with moisture. A second study dealt with the effect of available nematocides, and indicated that these were quite effective, although expensive with large plantings. Dr. Wilson's observations suggested that nematodes often did comparatively little damage to box, although they definitely added to "decline" of boxwood initiated by poor soil, poor cultural, or other unfavorable conditions.

The slate of officers presented by a nominating committee (Mrs. Burdette Wright, Mrs. E. M. Whiting and Mrs. George W. Burton, Chairman) was unanimously approved and included

President — Admiral Neill Phillips, "Heronwood," Upperville, Va.

1st Vice President — Mrs. Thomas De Lashmutt, "Oak Hill," Aldie, Va.

2nd Vice President — Mr. Bertrand H. Bratney, "Loudoun Orchards," Leesburg, Va.

Secretary — Mrs. Clay B. Carr, Boyce, Va.

Treasurer — Dr. Walter S. Flory, Boyce, Va.

Directors (for 2 years) — Dr. J. T. Baldwin, Williamsburg, Va., Dr. Henry T. Skinner, Washington, D. C., Dr. J. B. Wilson, College Park, Maryland, and (ex-officio) Dr. W. Ralph Singleton, Charlottesville, Va.

Directors (for 1 year) — Mrs. Orme Wilson, Boyce, Va. and Washington D. C., Prof. A. G. Smith, Jr., Blacksburg, Va., and Dr. Christopher Stuart, Winchester, Va.

Features of the meeting were the reading of resolutions of appreciation for the late, founding president of the society, J. Churchill Newcomb; the presentation to the society by Professor A. G. Smith of a beautiful gavel and block President's set made of polished boxwood; and gifts to members of rooted cuttings of different cultivars of Boxwood.

AMERICAN BOXWOOD SOCIETY

Treasurer's Report — 1961-62

Income — Memberships			
Life	1	$ 100.	
Sustaining	4	100.	
Contributing	20	200.	
" (@ $20)	1	20.	
Regular			
Charter	349	698.	
Other	75	225.	
A few above regular amts.		9.50	
Total	450		$ 1352.50
Expenditures			
Promotion			
Printing	$ 24.50		
Postal Cards	30.00		
Postage	53.96	108.46	
Boxwood Bulletin			
Oct. 1961			
Print. & Eng.	344.29		
Copyright	4.00		
Postage	25.10		
2nd class fee	25.00	398.39	
Jan. 1962			
Print. & Eng.	182.51		
Copyright	4.00		
Postage	13.80	200.31	— 707.16
In bank April 30, 1962			645.34
April 1962 (owed)			
Print. & Eng.	436.90		
Copyright	4.00		
Postage	21.77	462.67	— 462.67
Balance that will remain after paying bills			$ 182.67

Our Boxwood Gavel and Block

(Continued from Page 4)

wood in my basement for about 25 years.

"Recently, I have had a gavel and striking block made from this wood of the box tree, so that it might be presented to the American Boxwood Society at its annual meeting on May 1, 1962. On April 17, 1962, I spent the morning in Lovingston in the hope of getting some facts about the history of this boxwood tree. I interviewed a number of people at the Court House, at places of business and in homes. No definite facts about the history of the tree were obtained.

"Soon after the war between the states the house where this boxwood grew was bought by Samuel Stevens for his son, George Seaton Stevens, who became the first judge of Nelson County after the reconstruction days. In 1908 the house was sold to Lee Camden, who later sold it to a Tom Loving. A Mr. Campbell was living at the Loving home in 1936, according to information given me at Lovingston. I talked to Mr. Campbell on April 17. He is in his 90th year. He could not recall anything about the boxwood.

"The piece of the tree, which was given to me (in 1936), had 71 distinct growth rings. This would indicate that it was growing in 1865."

The American Boxwood Society is delighted to have this handsome gavel and striking block. The history accompanying it is an interesting and excellent contribution to our knowledge of effects of a certain type of injury, of approximate growth rates, etc., of the boxwood plant from which the set was made.

In "The Journal of Horticulture, Cottage Gardner and Country Gentlemen" for April 1, 1862 an article entitled "Mr. J. Standish's, Bagshot and Ascot Nurseries" mentions the items available. Among these are "*Buxus obcordata,* and its variety *Buxus obcordata variegata.* Two handsome species of Box with very short obcordate leaves, those of the latter being variegated with yellow. Both are likely to be very useful for edgings, etc."

The Boxwood Question Box

The Gremlin . . . Cold or Sun?

The Korean is considered one of the most, if not the most, winter hardy of the boxwood varieties. Yet in some of the coldest areas of Virginia, Korean, when grown in partial shade, has shown no winter injury. In other instances, however, when grown in full sun, it has suffered very noticeable damage.

It is hoped other growers of Korean will tell of their experience.

T. K. Wolfe
5401 *Cary Street Road*
Richmond 26, *Virginia*

Some beautifully designed sets of chessmen fashioned from boxwood by skilled Renaissance carvers are in museum and private collections. During the First World War, Roland von Bohr, while interned, carved such a set that later was in the notable collection of J. Maunoury, of Paris, France.

BOXWOOD AT ST. GEORGE TUCKER HOUSE
(John Crane)

The massive kitchen chimney of this 18th century home is a dominant feature of the exterior. This portion of the house was reconstructed on the old foundation and follows accurately existing descriptions of the original chimney. The house was completely restored in 1930. _Williamsburg, Va.