OCTOBER 1978

The Boxwood Bulletin

A QUARTERLY DEVOTED TO MAN'S OLDEST GARDEN ORNAMENTAL

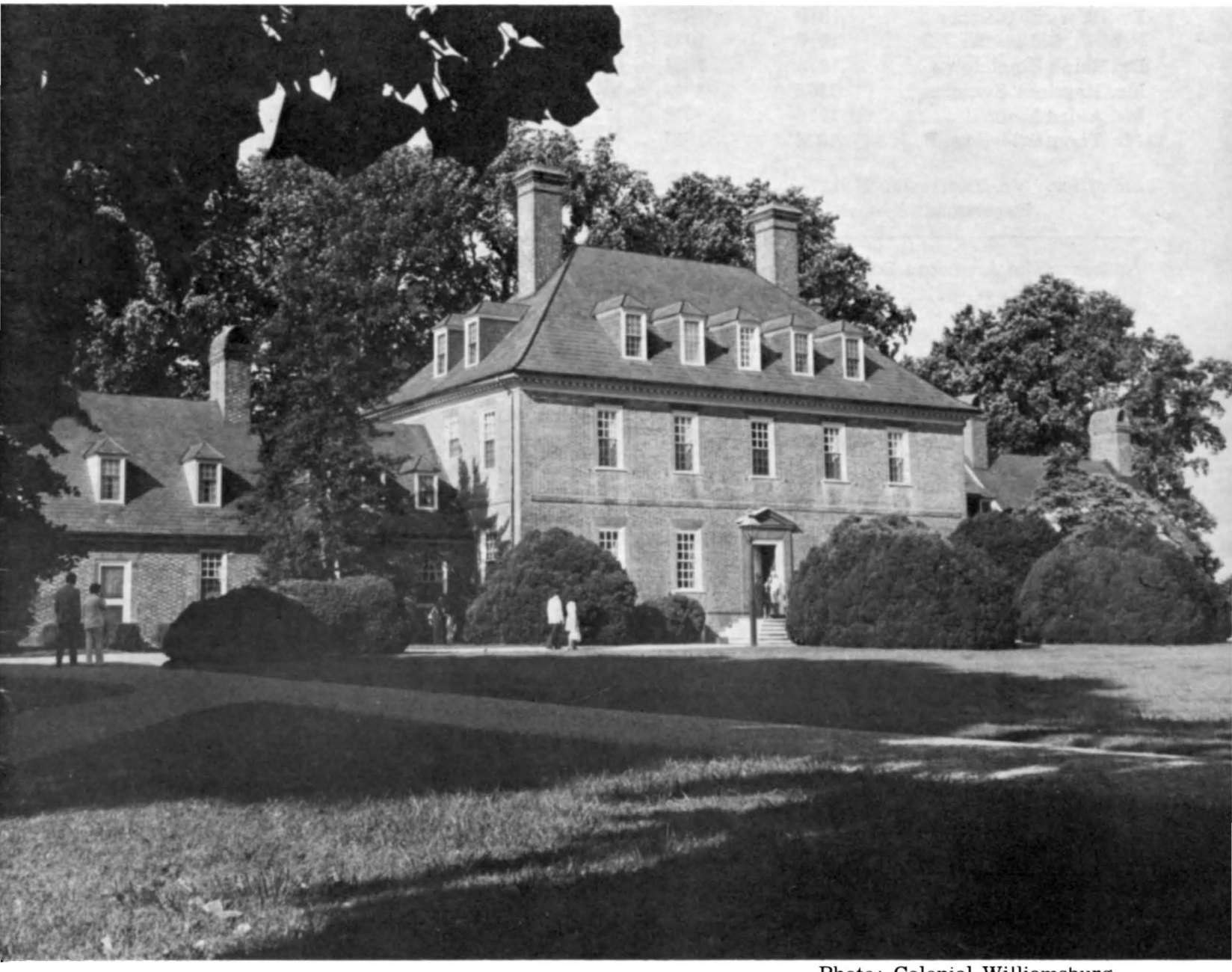

Photo: Colonial Williamsburg

Carter Grove: Said to be the most beautiful 18th century house in America with Boxwood "Status Symbol." Fine example of *Buxus sempervirens* and *suffuricosa*. The four large box are approximately 75 years old, and the two plantings on the left side of the photo are about 150 years old and vary from 5 to 8 feet.

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The Boxwood Bulletin

October 1978 Vol. 18 No. 2

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INDEX

ILLUSTRATIONS

Are Antitranspirants The Panacea For Boxwood Winter Injury?

Harrison M. Symmes

Director
The Mount Vernon Ladies
Association of the Union

Recent Eastern winters, particularly those of '76 - '77 and '77 - '78, have seemed catastrophic to gardeners and non-gardeners alike. On cold winter evenings we have drearily contemplated our fuel bills and have pessimistically compared the bleak view outside our garden windows with the hopeful colors of our new garden catalogues. We have speculated as to whether we are just in a brief cold cycle or at the beginning of a relentless new Ice Age. We have looked at old almanacs and tried to recollect stories told by our grandparents to find precedents in winters past. Some readers will recall that the winter damage inflicted by the severe winter of 1960 - 61 was a contributory factor in the founding of the American Boxwood Society in May of 1961. But, in general, our attention span is short. Spring gets us back in the garden to repair winter damage. When a subsequent winter finds us in shirtsleeves on Christmas Day or cultivating unfrozen ground in February, we will quickly shift to wondering about the imminence of a "greenhouse effect" and the probability of a long term warming trend.

Now that another growing season has filled in some of the foliage voids opened by the latest winter unkindness to our boxwoods (and even miraculously resurrected some of our "dead" magnolias and hollies), we have almost forgotten the alarms of the late winter and early spring of '76-'77 and '77-'78 that announced the casualties in our broadleaved evergreen plantings. Nevertheless, lingering concerns remain to haunt us. Like John Custis in Williamsburg in 1737 we wonder what we can do, what we should do, to give winter protection to our injured boxwoods. [0]

Antitranspirants (or antidesiccants as they are also called) are one of the latest panaceas offered as a solution to the winter injury problems. During the past three decades the use of antitranspirants has been increasingly advocaetd as the way to prevent winter kill to boxwoods and broadleaved evergreens generally. The antitranspirants have been touted by their manufacturers, as well as by a number of practicing horticulturists, as effective, easy to apply, invisible and thus aesthetically pleasing, replacements for the more traditional, but ugly and unwieldy, lath and burlap structures widely used to screen and cover boxwood plantings during the winter. Because they are considered relatively easy to apply to plantings, the high cost of the antitranspirants, and the spraying equipment used to apply them, is considered by some persons to be offset by a possible reduction in personnel costs and the risk of losing valuable plants. But are antitranspirants indeed the miracle solution? Are they really the perfect answer for the busy or lazy gardners who do not have time or inclination to provide proper and more traditional cultural conditions for their boxwood? Or is the use of antitranspirants another unfortunate example of technology applied in excess -- of our hurried and undiscriminating scramble to do everything the easy way -- another example of the search for instant and poorly considered technological solutions to long-standing and complicated problems? Before we try to answer some of these question, it will be well to renew our perspective on the boxwood plant inself.

BOXWOOD - - AN IMMIGRANT TO NORTH AMERICA

As one of our oldest and longer-living ornamentals, boxwood must be viewed in a historical perspective longer than a single human generation. A boxwood writer once aptly commented that we who grow boxwood today only hold it in trust for the short period of our own lives. Boxwood long outlasts people. Indeed, if we are to gain any wisdom from pondering the effects of the last two winters, we should consider the incidence and results of winter damage to boxwood over as long a time span as we have records.

1652 seems a long time ago, but let us remember that the evergreen species of boxwood we commonly refer to as "box" in this country are all immigrants to North America. The botanists assure us that until the European colonization our "box" did not exist in this country. Although some interesting species of *Buxus* are native to the Western Hemisphere (Bahama Islands, Honduras, Cuba, Jamaica, Mexico and South American),[4] the *Buxus sempervirens* and *Buxus microphylla* cultivars that comprise the group of plants we Americans grow as "box" today are all plant introductions that followed the establishment of the thirtten original colonies. In terms of plant history, the life of *sempervirens* and *microphylla* in North America has been but a fleeting instant (even though in our arrogance or ignorance that instant has led some of us to carry on the inaccurate designation of some of the *sempervirens* cultivars as "American"). More significantly, during th eapproximately four centuries that the immigrant boxwood species have been in this country, North America has not experienced what could be styled extreme fluctuations of climate (whatver may have been the shocking effects of our heating and air conditioning bills).

It is well known that some of the oldest and most famous boxwood plantings in this country antedate the founding of the Republic. We know that boxwood was planted in Sylvester Manor on Long Island as early as 1652 and that in spite of constant winter damage, it was still flourishing in the early part of this century.[2] Colonel Custis of Williamsburg was importing boxwood plants in 1726, and boxwood was being planted at Westover in the period 1688-1735.[3] References to boxwood culture in colonial times, while not abundant, exist sufficiently to provide us a historical continuum of several human generations for considering how the non-natvie species of the *Buxus* genus have fared in North America.

We know from articles in the *Boxwood Bulletin* (see, for example, Volume I, No. 1) that various cultivars of the immigrant species of boxwood are growing in Ontario (Canada), Missouri, Ohio, Indiana, Idaho, Michigan, New England, the Deep South and, in what has been considered its most congenial environment, the mid-Atlantic states of Pennsylvania, New Jersey, Delaware, Maryland, Virginia and North Carolina. Some of the cultivars have found some of those locations uncongenial. Yet, in other places the various *sempervirens* cultivars have been comfortably established for two or three centuries, and the later immigrant *microphylla* cultivars from the Far East seem likely to be even more hardy and adaptive to North America than the *sempervirens*. In 1901 a writer who knew the boxwood at Sylvester Manor wrote:

> In spite of the constant aggression of the winter-killing of box in the North, the oldest box in the country is that at Sylvester Manor, Shelter Island, New York. The estate is now owned by the tenth mistress of the manor, Miss Cornelia Horsford; the first mistress of the manor, Grissel Sylvester, who had been Grissel Gardiner, came there in 1652. It is told, and is doubtless true, that she brought there the first Box plants, to make, in what was then a far-away island, a semblance of her home garden. It is said that this Box was thriving in Madam Sylvester's garden when George Fox preached there to the Indians.[5]

But in other localities further south the same cultivars may languish and linger for only a decade or so.

HISTORICAL EVIDENCE OF BOXWOOD WINTER INJURY IN NORTH AMERICA

What do our historical records tell us about boxwood winter injury in North America over the past three hundred years? And for comparison purposes what do we know about boxwood winter injury in the more rigorous continental-type climates of Asia Minor when the *sempervirens* originated and has flourished under trying conditions? More important, what do available historical materials teach us about how to prevent winter injurv and how to care for the injured plant afterward? Unfortunately, our historical scholars and horticulturists have not had boxwood foremost in their minds when they have read and indexed colonial diaries, letters, garden records and other source materials that might contain references to boxwood culture. We are tantalized by the few examples we have, such as John Custis' correspondence with Peter Collinson in 1737 wherein he describes "the severest winter that ever was known in the memory of man, 16 weeks constant (*sic*) hard frosts" followed by an August that he called "the greatest dry season that was ever known in the memory of man . . . the dutch box edgings that survived the sever/e/ winter; perished in spots in the borders which had been established many years. . ."[6] But todav we lack not only indices of other material similar to the Custis correspondence but also do not have a compilation of weather information in boxwood growing areas that might reveal to us summer drought and severe winter cycles or other summer/winter weather patterns that could be correlated with potential documentary references to boxwood winter damage. What a fascinating interdisciplinary study this might be for historians, horticulturists and meteorologists. Such a study would be an invaluable means for testing our present somewhat haphazard and unscientific guesses about the long-term hardiness of boxwood in North America and learning how to prevent and treat the effects of winter injurv. This might be a worthy project for the American Boxwood Society to support.

But to return to the specific theme of this article, are the antitranspirants the best way or even an acceptable way to prevent or reduce winter injury to boxwood? Before we try to answer the question we should be sure we understand the nature of the antitranspirant substances and what they claim to accomplish.

THE THEORY AND PRACTICE OF ANTITRANSPIRANT USE

The use of antitranspirants is based on a theory that winter injury to woody ornamentals is caused by either low temperatures or desiccation, or both. Low temperature injury is caused by the freezing of the cell structures in the plant; since they are not insulators, antitranspirants do not prevent that kind of freezing damage, and claims for such are not generally made by manufacturers. Desiccation injury, on the other hand, occurs when transpiration (loss of water vapor) exceeds the water taken up by a plant's root system, thereby reducing the water potential of the plant. The plant in effect dries out. This drying or desiccation damage is thought to be most prevalent when warm temperatures and/or high winds occur in conjunction with frozen or dried-out soils.[7]

The foregoing explanation of the winter injury process may be superficially convincing but fails to take into account other possible causes of similar symptoms such as alternate freezing and thawing. sunscald, root rot, canker disease, stimulation of late summeh growth and mechanical factors such as bending under snow and ice. Moreover, the explanation does not give due weight to delayed effects as opposed to proximate effects. The truth is much more complex, as J. H. Tinga explains in his 1962 article on "Winter Injury to Boxwood." Tinga stated that, "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 ime. . . ." He cites: (1) the genetic makeup of the plant; (2) the plant's level of fertility; (3) the water supply ("A July drought may be manifested as winter injury in February of an already weakened plant"); and (4) the vigor of root growth. According to Tinga, the harshness of a winter (and resultant injury) depends upon (1) the rate of temperature drop; (2) the length of time the plant is exposed to zero degrees; (3) the dryness of soil and the dryness of winter winds (a dry summer followed by a dry, windy winter is a deadly combination); and (4) the amount and quality of snow.[8]

Antitranspirant products when sprayed on a plant either cause the leaf stomates (the microscopic pores occurring mainly on the underside of leaves) to close or else form a film over the stomates, thus sealing them. Antitranspirant materials intended to close the stomates have had limited application because they tend to inhibit or prevent essential gas exchange as well as causing other problems, but some horticultural authorities (and all of the antitranspirant manufacturers) claim that the film-forming antitranspirants appreciably reduce the rate of water transpiration without significantly affecting the exchange of gases between the interior of the leaf and the outside air.[9] The latter claim, which is of prime significance with respect to the efficacy of antitranspirants, will be examined in some detail later in this article.

The suppliers and convinced users of antitranspirants generally make the following recommendations for their application to plants:

1. Make two applications about two months apart (December and February are usually recommended).

2. Thoroughly spray the leaf surface. (At least one professional user argues, however, that spraying the underside of the leaf, by interfering with gas exchange, and perhaps plugs of antitranspirant material in the stomates, has caused foliage damage to Japanese Holly.)[00]

3. The antitranspirants composed of acrylic copolymers remain more flexible after drying and do not chip or peel from the leaf surface as readily as some of the other substances used as antitranspirants.

4. Producers of antitranspirants (and horticulturists who can afford to buy them) advocate using them on established plantings as well as on plants newly transplanted under stress conditions. Some horticulturists who generally approve antitranspirants restrict their use to newly transplanted ornamentals under stress.

5. Spraying equipment must be cleaned immediately after use to avoid clogging of strainers and nozzles (presumably similar clogging must take place in the leaf stomata of the plant).

USE OF ANTITRANSPIRANTS ON BOXWOOD

I have not been able to compile an exhaustive listing of institutions and nurseries that have used antitranspirants on boxwood. The limited information available would tend to indicate that some of those who have not by cost factors rather than by potentially adverse effects used antitranspirants may have been influenced largely or unproved efficacy. Of course, many growers simply have seen no need for any kind of special winter boxwood protection because they have found that good cultural practices have prevented extensive winter damage to their boxwood.

An incomplete sampling in the Virginia area revealed that an antitranspirant had been used on boxwood in the Mount Vernon exhibition gardens for a number of years prior to 1977 when its use was dicontinued. At Colonial Williamsburg antitranspirants have been used for some years on a more restrictive basis to reduce transpiration stress on new transplantings and on established plants in certain special areas where open southern exposures and intense sunlight in the winter had placed extraordinary stress on the plants. Some other historic and governmental institutions in the Washington/Northern Virginia area either had never employed antitranspirants for winter protection of boxwood plantings or in a few cases had restricted their use to transplantings under stress conditions.

I also made a very limited sampling of prominent and successful boxwood growers in Ontario (Canada) and Ohio. The largest grower of boxwood in Canada (growing upwards of 500,000 boxwood plants at any one time) has not used any antitranspirants in the production of

boxwood.[11] A second Ontario nurseryman who has some fifty year old boxwood plants reported that he had never used antitranspirants and in fact believes that winter damage results from factors other than those assumed in the theory of antitranspirant usage.[12] The Secrest Arboretum in Wooster, Ohio, has used antitranspirants on newly planted boxwood the first winter they are set out but has not tried them on established plantings because of cost factors. After five years the Arboretum discontinues even snow fence protection for established plantings so that the full climatic effects on well established boxwood may be observed.[13] As already noted above, the Cooperative Extension Service of the University of Ohio, Columbus, reports mixed results from the use of antitranspirants, including foliage damage on Japanese Holly possibly caused by gas exchange interference.[14] David B. Reed of New Jersey reported in the *Boxwood Bulletin* in 1971 that Wilt-Pruf, an antitranspirant, did not seem to him to be the answer to the winter injury problem. He wrote, "This will not protect if you have severe winds and temperatures near or below freezing for several days at a time, with little or no snow cover - - which is often the case in our area."[15] It is not impossible that freezing injury of leaves and twigs may be increased when antitranspirants cause retention of water which then freezes and damages cell structures.

The Missouri Botanical Garden in St. Louis, which is also headquarters of the Boxwood Society of the Midwest, has not used antitranspirants on plants in its boxwood nursery and only rarely has used antitranspirants in the Botanical Garden proper when it has been necessary to transplant boxwood in the autumn. Burlap screening is used when winter protection seems imperative.[16] On the other hand Old Westbury Gardens at Old Westbury, Long Island, New York, has used antitranspirants on established boxwood plants as a supplement to either snow fencing or burlap in the belief that it helps in the long run. Yet, Old Westbury Gardens did have some winter injury to boxwood in the winter of 1977-78, according to its Director.[17]

To sum up what I was able to uncover about the use of antitranspirants on boxwood, I did not find any reliable information based on controlled experiments with boxwood that would prove that antitranspirants are at all beneficial in preventing boxwood winter injury or that supposed benefits from its use are more effective than burlap or other screening protection. The opinions of those favoring the use of antitranspirants for winter protection is at this stage largely on the order of *Post hoc, ergo propter hoc.* More important, I have found evidence of experimentation designed to weigh the theoretical benefits of antitranspirants against the probable countervailing metabolic side effects discussed in the next section of this article.

POSSIBLE ADVERSE METABOLIC FACTORS INVOLVED IN ANTITRANSPIRANT USE

To me the most disturbing aspect of my investigations of the use of antitranspirants on boxwoods was the extremely limited amount of technical research that has been done to assess the potential short-term and long-term effects on plants. My concern was heightened by the results of some of the available research, which indicate clearly the probability of adverse metabolic effects from using the antitranspirants presently offered in the commercial markets. So far as I have been able to determine, the danger is not that a consumer may employ the substances other than as recommended by the manufacturer; the fact is that the manufacturers simply do not seem to have the experimental knowledge on which to base plant-specific recommendations for the use of antitranspirants. Directions for use are limited to broad generalizations that do not appear to take into account the limited technical research on possible side effects that does exist. The bibliography appended to this article lists the pincipal relevant technical articles on antitranspirants that I was able to locate.

To understand the implications of some of the research conclusions that follow it is important to have in mind the plant physiological factors involved in transpiration and in photosynthesis. Transpiration is the main process by which plants lose water. It involves water loss in vapor form through the microscopic pores (stomata or stomates) occurring mostly on the leaf surfaces. The stomata open and close in response to environmental factors such as light, temperature, humidity, the general water status of the plant and even its innate biological rhythm. The chief function of the stomata is to serve as a channel for the exchange of gases (particularly carbon dioxide and oxygen) involved in the food-manufacturing process we call photosynthesis. Those who advocate antitranspirants argue that transpiration in plants is largely "unnecessary" (which strikes me as more than ordinary human arrogance) and that controlling water loss by antitranspirants is a desirable alternative. Controlling the stomata openings or sealing them will certainly inhibit or prevent transpiration, but what then is the effect of this on the exchange of the gases involved in photosynthesis?

It might be argued that the plant is dormant during the period of potential winter injury and that inhibition of gas exchange for photosynthesis does not matter in contrast to the importance of preventing transpiration resulting in water stress and desiccation during the winter, But such a theoretical hypothesis has not been confirmed by experimental evidence so far as I am aware, and, in addition, it assumes a degree of flexibility in applying and removing antitranspirants that is not possible in the current state of the materials. To my way of thinking, it is of sinister significance that once the antitranspirant film is on the leaves and stems it cannot be readily removed in anticipation of the commencement of a growth period. In fact, an antitranspirant film may remain intact and unaffected by the environment well into a new growing season. The film also may be built up and compounded by successive annual sprayings. On the other hand, the film may be rapidly removed by rain, irrigation, wind, sun, etc., depending upon its physical characteristics or the characteristics of the agent used to spread it. In short, the durability of an antitranspirant film is largely a matter of chance and the result of largely uncontrollable factors.

If metabolic gas exchange has been inhibited into the next growing season, the plant may need new leaves in order to resume its normal growth, as well as to carry out its normal transpiration, but as pointed out above, the arrest of transpiration and photosynthesis is not reversible to meet rapidly changing seasonal growth and water requirements. Moreover, this leaves aside the important question whether normal root growth during the dormant season may not require photosynthesis. It also suggests to me that it may even be undesirable to use antitranspirants to protect against transplanting stresses.[18]

A number of such potentially adverse effects of antitranspirants were discussed in a well-researched article by W. J. Davies and T. T. Kozlowski in the *Journal of the American Society of Horticultural Science* in 1974.[19] In the case of one plant studied the authors found that the antitranspirants caused a decrease of photosynthesis with time, even when direct physical effects of the compounds had worn off. They reported that another earlier investigator[20] had found that even the "most promising" film-forming antitranspirant materials are at least four times more permeable to water vapor than to carbon dioxide exchange. In other words, even assuming the desirability of reducing transpiration, the adverse effect on photosynthesis is four times the theoretically favorable effect on transpiration reduction. Toxic products may accumulate in the photosynthesis system. The stomata may become clogged with permanent plugs of antitranspirant "gunk." Continued reduction of the cooling effects of transpiration after winter is over can be expected to cause an increase in leaf temperature (even under winter conditions in strong sunlight). Repeated applications of an antitranspirant over several years by compounding these other factors may be especially dangerous to the growth process and has not yet been investigated experimentally. The whole thrust of the 1974 Davies and Kozlowski article calls antitranspirants into serious question and suggests that careful evaluation of antitranspirants is in order.

In a 1972 article in *Plant Physiology* three other investigators reported finding similar to those later reported by Davies and Kozlowski.[21] They concluded that, "Clearly, investigation is needed of the optimum time for antitranspirant application and of the long term results of repeated sprays on perennials such as fruit trees and ornamental shrubs"[22]

A third group in 1965 had found that antitranspirants used in experiments in the early sixties did not protect against damage apparently caused by low temperatures (as opposed to desiccation) and also pointed to the difficulty of d e t e r m i n i n g whether a given winter injury is a result of temperature or desiccation, or both.[23]

A California team in 1973 reported that film antitranspirants affected growth adversely by reducing photosynthesis and favorably by increasing plant water potential.[24] They concluded that whether an antitranspirant reduces or increases growth of a particular plant part probably depends on whether current photosynthesis or plant water potential is more important to its development at the time of treatment. At the same time, they expressed doubt as to whether the short term effect on reducing transpiration or water loss was worth the longer term hazards involved in slowing and interrupting the photosynthesis rate.[25]

For less technically minded readers John D. Martin's article in the November 14, 1974, *Florists' Review* provides an excellent summary of some of the hazards in the use of antitranspirants.[26] He describes certain side effects that may not become apparent for a long time. He also stresses that "incorrect" (but what is "correct"?) use of antitranspirants may be toxic to plants. Even the wetting or spreading agent used with the antitranspirant may have a toxic effect. Martin also mentions the objection raised by technical investigators that reduction of transpirant may reduce the plant's ability to cool itself under critical temperature conditions. Reduction of photosynthesis may result in yellowing of foliage and necrosis, not to mention adverse metabolic interferences in the root or vascular systems of which we may not be aware. Martin suggests that antitranspirants may be justified for plants in pot culture which are more subject to water stress in the short term than field grown and established plants. He concluded that the perfect or ideal antitranspirant has yet to be developed.[27]

BACK TO THE POOR BOXWOOD GROWER

The average boxwood grower may find it difficult both to find and to evaluate technical articles and the confusing claims of manufacturers and advocates of antitranspirants. Nevertheless, I myself am convinced on the basis of presently available evidence that it is unwise (as well as being quite expensive) to use antitranspirants on established boxwood plantings. I personally would recommend against antitranspirants use even where a prize boxwood plant in being transplanted has been so mishandled in the digging as to have its root system badly damaged. I believe that a burlap screen or snow fence/lath shade combined with judicious watering and mulching will be just as effective in alleviating the distress of a mishandled plant — and without any risk of the potentially long term adverse effects of the antitranspirants.

As to general winter protection for established plantings, the consistent recommendations of the Boxwood Society, recently so well summarized by the President in the October 1977 *Bulletin*,[28] still represent the best advice. Proper cultural practices year round remain the best preventive of winter injury and the best therapy for those plants that happen to be winter injured. I would emphasize, however, that "proper cultural practices" are not synonomous with the "studied neglect" sometimes advocated by would-be experts.

Some of the oldest boxwood plants in North

America are now more than 200 years old. They have lived through many severe winters and have suffered occasional winter injury. But they probably have suffered more damage from man's ignorance than they have from winter's unkindness. Antitranspirants have been with us only about thirty years, and the increasing petroleum shortage may price them even more out of reach of our pocketbooks than they are already. At this stage antitranspirants are for boxwood growers who are unwilling to make the necessary effort to care properly for boxwood or who may be heroically trying to preserve plants that have been put in the wrong place. In my opinion, using antitranspirants to prevent boxwood injury is a kind of overkill with side effects. It is analogous to using DDT to control psyllids, or mites, or leaf miners. Most healthy boxwood plants under proper cultivation do not get those pests in significant numbers, just as properly cared for boxwood do not seem to suffer significant winter injury even in Ontario. The side effects of DDT and antitranspirants may be of differing orders of significance, but the lesson is there: we have other less dangerous pest controls to substitute for DDT; we also have other time-tested ways without dangerous side effects for preventing winter injury to boxwood.

In short, my firm conclusion is that boxwood is too valuable a plant to leave to those who would use antitranspirants as a substitute for other cultural practices. Until reputable technical investigations have resolved some of the questions that have been raised by the research cited in this article, I strongly believe antitranspirants should not be used on boxwood.

FOOTNOTES

[1]Alden Easton, "Boxwood in Williamsburg." *Boxwood Bulletin,* Vol. 3, No. 3, January 1964, p. 41.

[2]Alice Loundsberry, *Gardens Near the Sea,* (New York: Frederick A. Stokes Company, 1910), pp. 82, 129, 263

Alice Morse Earle, *Old-Time Gardens* (New York: The Macmillan Company, 1902), pp. 104 and ff.

As of the time of submitting this article I had been unable to obtain any current information about Sylvester Manor and its boxwood plantings.

[3]J. T. Baldwin, "Boxwood." *Boxwood Bulletin,* Vol. 2, No. 4, April 1963, p. 42.

[4]Walter S. Flory, "Buxus Species, Distribution, References, and Synonymy — Based on *Index Kewensis.*" *Boxwood Bulletin,* Vol. 1, No. 3, April 1962, pp. 36-40.

[5]Earle, *Old-Time Gardens,* pp. 104-105.

[6]Eaton, "Boxwood in Williamsburg," p. 41.

[7]Elton M. Smith, "Some Aspects of the Use of Anti-Desiccants to Prevent Winter Injury." *Nursery Notes,* Vol. IV, No. 2, March-April 1971. (Ohio State University, Columbus, Ohio), pp. 2-4.

[8]J. H. Tinga, "Winter Injury to Boxwood," *Boxwood Bulletin,* Vol. 2, No. 1, July 1962, p. 9.

[9]Smith, *Nursery Notes.*

[10]Elton M. Smith, Extension Specialist, Landscape Horticulture, Cooperative Extension Service, Ohio State University, Columbus, Ohio, in a letter to me dated September 1, 1977.

[11]L. C. Sherk, Chief Horticulturist, Sheridan Nurseries Ltd., Oakville, Ontario, in a letter to me dated October 6, 1977.

[12]E. Bradford Clements, Clembrook Boxwoods, Milton Ontario, in a letter to me dated September 1977. See also E. Bradford Clements, "Is It Too Cold Here for Boxwood?", *Boxwood Bulletin,* Vol. 8, No. 2, October 1968, pp. 19-21.

[13]John E. Ford, Curator, Secrest Arboretum, Wooster, Ohio, in a letter to me dated August 22, 1977.

[14]Smith letter cited above.

[15]David B. Reed, "Winter Protection in New Jersey," *Boxwood Bulletin,* Vol. 11, No. 2, October 1971, p. 19.

[16]Mrs. D. Goodrich Gamble, immediate past President of the Boxwood Society of the Midwest, St. Louis, Missouri, in a letter to me dated June 10, 1978.

[17]Carl A. Totemeier, Jr., Director of Old Westbury Gardens, Old Westbury, Long Island, New York, in a letter to me dated June 15, 1978.

[18]W. J. Davies and T. T. Kozlowski, "Short- and Long-term Effects of Antitranspirants on Water Relations and Photosynthesis of Woody Plants," *Journal of the American Society of Horticultural Science,* Vol. 99, No. 4, 1974, pp. 297-304.

[19]Davies and Kozlowski in article cited.

[20]Davies and Kozlowski on p. 297 of article cited refer to an article by P. E. Waggoner in 1966 entitled, "Decreasing Transpiration and the Effect upon Growth."

[21]Davenport, Fisher and Hagan, "Some Counteractive Effects of Antitranspirants," *Plant Physiology,* 1972, Vol. 49, pp. 722-724.

[22]Davenport, Fisher and Hagan, p. 723.

[23]Smith, Chadwick and Reisch, "The Use of Anti-Desiccants in Reducing Transpiration and Protecting Ornamental Plants against Winter Injury," Journal of the American Society for Horticultural Science, Vol. 88, 1965, pp. 703-707.

[24]Davenport, Uriu and Hagan, "Effects of Film Antitranspirants on Growth," *Journal of Experimental Botany for Physiology, Biochemistry and Biophysics of Plants,* 1973, p. 410.

[25]Davenport, Uriu and Hagan, p. 416.

[26]John D. Martin, "Antitranspirants, Possible Uses in Floriculture," *Florists Review,* November 14, 1974, pp. 19 ff. Reprinted from *The Maryland Florist,* No. 190.

[27]Martin, p. 135.

[28]*Boxwood Bulletin,* Vol. 17, No. 2, October 1977.

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PRUNING PROJECT: Members of the Horticulture Committee under the active direction of Chairman Jane Penhale, pruned five large, old boxwoods in the sunken garden at the rear of Sachs Properties, Inc., 7 N. Brentwood, Clayton. One plant was discovered to have three major stems split with no hope of recovery; a second plant had to be pruned back about one-half, but with every prospect of recovery. Three plants were in good condition with the exception of one lightly split trunk. The pruners worked "from the inside out" to remove dead inner branches and twigs and to admit light and air. The plants then were fed with a 10-6-4 fertilizer. Jane's crew included Kerry Elgin, Charlotte Mandel, Carol Winkelmeyer, La Verne Jaudes, Joyce Niewoehner, Mary Holekamp, Mary Gamble and Jack Horner. The Boxwood Society received a modest fee for the job which was obtained by Jane Coultas.

HISTORICAL VIGNETTE....

from: Boxwood Society of the Midwest Bulletin

Boxwood was given its botanical name by Carolus Linnaeus, the great Swedish botanist, in 1753. It stems from the quality of its wood, and from one of its historic uses, for which we can thank the Ancient Greeks. The Greeks loved beauty, in their temples and sculpture and in the small objects with which they surrounded themselves. Among these objects were exquisite small boxes fashioned of the elegantly pale, hard and fine-grained wood of the small evergreen boxwood tree native to certain areas of Southern and Central Europe and Northern Africa. Their name for the small boxes was *pyxos.* The Romans, in their turn, copied the boxes, in which they and the Greeks stored such precious things as cosmetics, unguents and jewels. The Latin name for such a box was *Buxus.* When Linneaus named the Latin *Buxus,* for box, and *sempervirens,* for evergreen.

Possibly the Greeks used both the *Buxus sempervirens* familiar to Linnaeus and another species called *Buxus balearica.* Natural populations of *Buxus sempervirens* grew conveniently near to the Aegean Sea; and the agressive sea-traders of the Mediterranean almost surely included in their cargoes the wood of the second species. It was a magnificient plant native to the Balearic Islands which lie in the Western Mediterranean Sea off the coast of Spain. This large-leaved boxwood grew to 30 feet and for a long time was called "the boxwood of commerce." In 1785 the French Naturalist Lamarck named it *Buxus balearica.*

Buxus balearica is not hardy in the Midwest but we can all enjoy it. The Boxwood Society has several small plants in the Garden greenhouses. These were sent us as cuttings from the College of William and Mary in Williamsburg, and as rooted cuttings from Kew Gardens in England. One will be placed in the Mediterranean House when it has reached sufficient size.

Boxwood Replacements

Where boxwoods are used extensively, lining a walk or in a formal patterned garden, it is a good idea to grow a few replacement plants in a section of the vegetable garden or in some isolated portion of the yard. These can be used to replace injured or weak plants. Often poor quality plants can be rejuvenated by moving them out of a formal garden and replacing them in an isolated area. Reducing some of the top growth of weak plants after moving is beneficial, plus an application of fertilizer.

One of nation's oldest homes with boxwood around 200 years ago.

Photo: Colonial Williamsburg

The north side of the great double hedge at Gunston Hall, looking toward the house. Aged boxwood and younger boxwood in clipped hedge.

HORTICULTURE

18th Century Status Symbol
by Frank Horsfall, Jr.

Dr. Frank Horsfall Jr. is professor of horticulture at Virginia Tech. He received his B.S.A. from the University of Arkansas and the M.S. and Ph.D. degrees from the University of Missouri. He joined the Tech faculty in 1947. The basis of the article was an invitation paper to a symposium on 18th Century Agriculture, sponsored by the Smithsonian Institution, Agricultural History Society, and Accokeek Foundation.

Reprinted by permission of author and context, VPI and SU, Vol. 11, No. 4, Summer 1968.

In the milleniums since its origin, horticulture has inherited advances from many countries. Remarkable and intricate gardens have existed throughout history, but few could have reached such splendor had it not been for slave labor. A few 18th century Virginia and South Carolina tidewater planters had the necessary prerequisites, and one of their memorials lies in the impressive horticultural elegance that lives after them.

The history of horticulture is intimately tied to the history of fence building. Even the word horticulture, meaning to cultivate an enclosure, is derived from the ancient world. The Latin *hortus* designated a somewhat pretentious rural or urban villa. In and near ancient Rome, these homesteads were set apart by barriers against animals. The *hortus* enclosure originated when early man was compelled to erect a de-*fence* of some sort to separate wild beasts and his herbivores from the garden.

William Byrd's colonial Westover Garden was bordered by brick walls. Old serpentine lines of masonry that seem to simulate a rail fence still stand in Virginia, signifying the plight of the horticulturist and the cost of effective land enclosure—a minimum essential for gardening until animals were fenced *in* rather than *out*.

In ages past, primitive man guarded his home by means of a spiny, fortress-like enclosure behind which he was safe from the great cats. Following the idea, a physician named Warder in 1858 published a manual on hedging and fencing with thorny plants, showing them to be the cheapest and most advanced method of fencing for the times. The knowing observer can still find many overgrown hedge lines of osage orange trees as reminders of that era.

Barbed wire, originally known as "thorn wire hedge," was a latecomer invented in 1874. This "thorny" wire, only a latter day modification of the spike-studded plants, ushered in the modern era of land enclosure.

The length of time which the hand-power age of horticulture lasted is another manifestation of the carryover from one age to the next. Two hundred years ago, plant culture was but little advanced beyond Roman times. Numerous good planters relied entirely on the hoe, because tree roots and stumps were almost everywhere formidable barriers to the use of animal power.

Under conditions existing in the 18th century, there was no real distinction between weapons and tools. The basic equipment for survival in the hu mid eastern United States was the ax, the boat, and the long rifle. Along the more arid zone of the 100th meridian and westward, barbed wire for garden and home protection, the windmill, and the revolver were fundamental contrivances.

Beyond the concept of implements, horticulture in the 18th century exhibited two facets — that of the gentry who comprised one or two percent of the population and that of the common man. The social gulf between the substantial planter and almost everyone else was probably never wider than in Virginia around the year 1750. "Book learning," the influences of intellectualism, and acceptance of operational advances belonged largely to the few; resistance to change was characteristic of the majority.

The horticulture of the lower socio-economic levels in the 1700's was mostly concerned with growing food, although astonishing survival of some ornamentals may be seen on occasion. An apple tree which was set in Revolutionary times by Hessian prisoners of war still grows in Virginia.

In part, the meager status of the less affluent was indicated by the ground about their homes, which was kept as bare of cover as a tidal beach. In some areas the total want of yard grass existed well into the 20th century. In the hand power age little energy could be extended to anything other than necessary cultivation.

Storable vegetables, such as turnips, were among the principle horticultural crops of the 18th century. Cabbage was produced for sauerkraut. Apples were dried, consumed fresh from the trees, or used for making hard cider. A considerable amount of brandy was made from peaches. In areas of mild climate, figs grew most luxuriantly alongside cabins; under the shade of the plant and under the dwelling, the shallow roots met few or no competing weeds.

Fruit and garden crops, sparse as they might be about the poorer homes, helped give variety to the often heavy dependence on meat. The abundance of game was one reason for the inferior practice of horticulture; man could live on meat alone — if he also consumed the internal organs. Tripe and brains, along with some other less-attractive tissues, were essential to a sustaining meat diet.

Culinary herbs might be cultivated or spices obtained to add relish and zest to the food or to mask the gamy taste of incipient meat decay. However, condiments in the desired potency and variety were likely to be in short supply. In part, because unsatisfactory food storage necessitated a great urge to secure spices originating in the Far East, America was discovered quite by accident.

Although of variable quality, pork was usually a dependable addition to the meat supply. But the nearly wild hogs were a constant menace to gardens; and the Virginia zig-zag rail fence is said to have been designed principally to prevent swine depredations. For an effective fence, about 1200 rails were needed to enclose a single acre, requiring vast numbers of the finest, straight-grained, rot-resistant, clear lumber trees that ever existed.

The thin, flat-sided razorback hogs were accomplished fence breakers, however, and learned to slither through almost every rail fence built. Unless the hogs were mud covered, leaving a trail behind, the point of entry through the fences was difficult to find. The enclosure walls at Mount Vernon stand in silent testimony to this annoying porcine problem.

Gardens Were Status Symbols

Practically every age in history has its status seekers and status symbols; and a stately mansion with surrounding resplendent gardens was a symbol

BERKELEY PLANTATION: *Buxus sempervirens,* 5 to 6 feet tall. On James River near Richmond. Built in 1726. Ancestral home of the Harrisons, two of whom became President. Settlers landing there in 1619 Inaugurated our annual Thanksgiving Day more than a year before Pilgrims came to America. Plundered by British in the Revolution. Headquarters of McClellan in Civil War.

of status in the 18th century. Many Southern men of wealth in those days had the requirements: ample land, more than adequate money, and a plentiful supply of slave labor. The tidewater planter was characterized by his social grace, urbanity, acquaintance with Horace and Blackstone, and often a dash of hot temper. The planters were hard-working supervisors and tolerated no romantic nonsense—quite unlike the portrayal of their life at modern Williamsburg, which tends to enforce the erroneous belief that the colonists were all gallant gentlemen and lovely ladies living in glossy idleness.

The need for a ready and prominent method to evaluate status was only one of a number of factors that induced an abiding interest in horticulture in colonial days. The ostentatious display possible today by owning a luxury automobile was not available, but a showy garden was a superb answer. The English gentry penchant for gardening was present in the American gentry, too, and readily showed itself. The monotony of the flat countryside doubtless left an intellectual and spiritual need unfulfilled, and, as an escape some planters became skilled in the fashionable art of horticulture.

Another factor encouraging horticulture was that the choicest food for the table could be dependably secured in no other way than by growing it. And since the planters often were involved in their states' legislative bodies, a need often existed to be able to entertain the notable visitors of state as lavishly as possible. To repair to a garden was also an inviting pastime.

The 18th century was a period of transition that saw beginnings of the application of science to the ancient art of horticulture. Apparently, the planters and leaders in professions of the time realized that contemporary developments in science might ultimately assist agriculture, so they set about and helped form agricultural societies. These societies sought solutions to problems of widespread general significance rather than to restricted problems with immediate grower utility, but the catalytic effect created for the future is now apparent. Society members made one of several steps that eventually led to the land-grant college movement.

For the ordinary farmer, work of the societies meant little. Most small operators based their farming on superstition, astrology, and the usual run of almanacs. Within the intellectual climate of 1762; it is said that a Harvard student in his thesis reported that "heavenly bodies produce changes in the bodies of animals." If the Harvard man had included horticulture, imaginary planetary effects on garden plants probably would have been seen also. In every chimney corner hung an almanac, zealously read on rainy days by most literate frontiersmen. The faint stirrings of horticultural science, as dispensed by almanacs, constituted a considerable portion of their reading material.

In an 18th century edition the skeptical and slightly roguish editors of the still extant *Old Farmer's Almanac* sprightly employed astrological terms to emphasize that: "There will be this year many *conjunctions* and fewer *oppositions* than usual between bachelors and old maids." Moreover: "Now is an excellent time for old bachelors to visit old maids, as the sun is in Libra." Similar witticisms, far in advance of their time, were at hand even as far back as *Poor Robin's Almanac* in 1690.

When compared with the 18th century, most modern horticulture is characterized by the extremely localized areas to which important production is largely restricted. In the 1700's cultivation was attempted of a wide variety of indigenous and exotic species of plants, some of them far from their ordinary life zones. Both potentiality of success for the new horticultural areas and the plants themselves were really, and perhaps unknowingly, being subjected to a survival-of-the-fittest program. Planting on the far side of a mountain or just eastward of a divide often spelled the difference between success and failure. Thermal belts free of radiation frost were discovered by many who possessed but little knowledge of meteorology or of topographical influences. Some sites for choice performance were discovered that now seem less than optimal.

In some isolated frontier farmsteads, serious horticultural insects and diseases were limited in number, especially when the distantly removed plants had been propogated from seed. Worldwide transportation had not brought exotic pests to the new locality. Without pesticide treatment, seedling apples and other fruits on the frontier were far enough removed from pests to reach their potential. Apparently, the current, almost futile dooryard planting of autumn-fruiting apple trees is a relic of the time when fruit culture was less exacting.

The fine homes of this era and immediately afterward can be arranged into two categories: Georgian to about 1800, and Greek Revival from 1800 to the Civil War. The transition between the two types was made easier by the idealization of classical antiquity by Jefferson, Latrobe, and others. Hostility of many colonists toward England and its baroque Georgian architecture were negative factors favoring the change. Latrobe, while not limited to the Greek inspiration, was one of the principal architects of the Greek Revival in America.

Farmsteads of both types of architecture were frequently set back some distance from the public highway. Even today these frontal acreages are observable in Virginia and South Carolina. The entrance and attendant driveway might receive some horticultural treatment or wind through a grove of magnificent virgin timber. Private lanes paralleling the public road often linked adjacent homesites.

The reasons for placing homes at a distance from the main roads are somewhat speculative. A man born early in the 19th century once asserted that wild shooting and drunken roistering by those disporting themselves along the public road was the cause of the retreat. Perhaps the real explannation lies in an effort to be near the center of the plantation, to build on a pre-eminent site, or to attain seclusion. Where it was convenient, means were sometimes taken to avoid isolation. Washington

was said to have stationed a slave at some nearby crossroad to invite chance passersby to Mount Vernon for the news and companionship they might provide.

Roads And Trailways

In keeping with land enclosure, roads and trailways of many sorts have long been subject to horticultural treatment. To distinguish private drives from public lines of way, the early public routes in certain areas were marked by three blazes placed here and there through the forest or countryside. The term "King's Way" has been applied to some colonial roads. Likewise, in New England, three blazes were employed to reserve choice slender trees as masts for sailing vessels. The marked specimens were designated as the king's timber. It is postulated that the triple insignia indicated George III, the kingly horticulturist of England.

The Indians also indicated the course of their pathways by tree markings. Tall, young saplings were broken into the shape of a large capital letter "N," which shape the trees retained, even in old age. A few can still be seen.

According to one modern author, the superior gardens that have been discussed were with a few exceptions designed by knowledgeable amateurs rather than by landscape architects. The majority were laid out, planted, and brought to maturity by their owners who had the previously mentioned requisites: ample land, money, and labor.

Probably the nearest approach that has ever been made to a distinctive American garden are the old boxwood gardens of Virginia. In South Carolina the live oak trees with their arcades of Spanish moss were the basis for another, most appealing type of garden. By the 18th century, in the arid Southwest and Far West, the quite distinctive Spanish garden prevailed. The Spanish garden is characterized by palms or yucca, cactus, and sand. Spanish architecture and gardens, also seen in Florida, fit the terrain to which they are adapted; to attempt the type elsewhere produces a monstrosity.

If one pauses within colonial garden walls in the deep South, a particularly pensive and pleasurable mood of mental serenity is induced by the moss-festooned live oak trees in their native setting. Suddenly, there is the realization that all of this might pass away one day. At the loss of noble old specimens in the gardens, will others at the location then be venerable enough to recapture the atmosphere and stand in their stead, or is the age gap too great? If so, the impressive gardens and the world will be poorer in a way somewhat comparable to the loss of a higher animal species. These large, free-ranging and stately trees, never in prodigious numbers, seem so much a race apart.

In memory of past visits under the trim canopies of colonial gardens, more is found than meets the eye — far more than shrubs and trees and flowers. Like Diocletian and the aristocrats of old, you may return either actually or in mind to recapture a joy of tranquility and contemplation.

BOXWOOD: ONE OF OUR OLDEST AND HARDIEST EVERGREENS

Elizabeth Cabell Dugdale

If we could have for our home grounds only one evergreen we would choose boxwood for it endures regardless of neglect.

This is the story of the garden and boxwood at "Union Hill" former home of William Cabell, jr. The house was built about 1774. Some parts were never entirely completed because the Revolutionary War came along.

William Cabell, jr. helped to found Hampden-Sydney College. (We still have several lottery tickets which helped to finance this early college) He was also active at William and Mary. His old Cabell Pew may still be found in Bruton Parish Church.

Many years ago one of the Cabell daughters, we are told, planned the garden at "Union Hill." We have unfortunately forgotten her name but a later great granddaughter, Miss Lucy Gilmer Cabell gave us this account.

The garden was planned similar to an 18th Century garden, with a path down the middle, and formal beds in squares and triangles. On either side were planted "buttercups" (So called by Miss Lucy), but actually the old fashioned fragrant daffodils (jonquillas), Lily of the Valley, "Lemon lilies", (small yellow day lilies), "August lilies" (funkia), "Bluebells", and the old fragrant single blue hyacinths.

At the entrance to the garden and at each "focal" point were lovely "old English" boxwood (B. suffruticosa). In the center of the square was a large "tree boxwood" (B. arboresence.)

In the early days when "labor" was plentiful the garden retained its well kept beauty. When "hard times" came along and the aged spinster was too old to weed, the writer would spend her vacations doing a little weeding.

Finally the old home and the land had to be sold. The land having been in the Cabell family since the original grant from the King.

In 1968 the family found it necessary to sell the property. It was bought by a prosperous "customer" whose only interest was making money raising cattle. The cattle were turned into the yard and garden and inspite of this the boxwood has survived.

The pictures show some of the lovely old boxwood which has survived inspite of neglect.

Many years ago "Miss Lucy" gave a lovely boxwood to the National Cathedral garden in Washington.

Now the old house is still standing with no tenant. The "remains" of the garden at the back have only boxwood and some daffodils in the spring.

Let us cherish and preserve our old homes and boxwood as long as we can.

Boxwood Around The Lincoln Memorial

Roland M. Jefferson

Botanist, U.S. National Arboretum,
Agriculture Research Service, USDA
Washington, D.C.

Reprinted with the permission of the author and The Horticulturist, Vol. 4, No. 4, Late Summer 1975. Mount Vernon, Virginia.

Several very old magnificent boxwood specimens as they appear today around the Lincoln Memorial. Other mature broadleaf and needle evergreens serve as accents and contrasts.

One of the best collections of boxwood in the Nation's Capital is located on the grounds of the Lincoln Memorial. These beautiful plants, many over 150 years old, growing among large specimens of magnolias, hollies, and yew, blend pleasingly into the surroundings of one of the Nation's best known monuments.

The collection of boxwood is even more remarkable when one considers the difficult growing conditions it has endured over the years and the variety of sources from which it came. Although many of the boxwood have thrived in this location, others have not and have had to be replaced.

An example of the problems of growing can be found with the hedge of English boxwood (Buxus sempervirens L. cv. Suffruticosa) that once lined both sides of the Memorial's entrance walk. Due to many losses, this hedge had to be replanted twice within the first 25 years after planting. Consequently, dwarf yew (Taxus cuspidata Sieb. & Zucc. cv. Nana) was used as a more successful replacement. The common (Buxus sempervirens L.) and American (B. sempervirens var. arborescens L.) boxwood grew better throughout this planting, although several of them have also died or were transplanted because of disease and sun scald.

Most of the early problems were caused by poor drainage and unsuitable soil conditions. Drainage problems were decreased when subsurface tiles were installed over coarse gravel to remove excess water. But to understand why other unsuitable soil conditions existed, one should consider the origin of the ground on which the Memorial stands.

Through the latter half of the 19th century, the part of Washington comprising the Lincoln Memor-

ial region was a tidal swamp area of the Potomac River. Known as "Kidwell Flats," this marsh land was formed by layers of silt and debris washed into the Potomac from upstream erosion and earlier grading work done on the streets of Washington. During this period, the flats frequently flooded from the rising river and were covered with willows, cattails, and other types of swamp vegetation. Though the area was near the White House, it was still generally considered one of Washington's least desirable locations.

To make the silted Potomac more navigable, a major engineering project was initiated by the U.S. Army Corps of Engineers in 1870. As a part of this effort, a long retainer wall was built along the river banks. Silt was dredged from the river and deposited on "Kidwell Flats" and other sites along the Potomac. These land fills established the grounds for the Lincoln Memorial, Haines Point of East Potomac Park, and the Tidal Basin. Completed in 1907, this operation raised the area around the Lincoln Memorial well above flood level.

In addition to elevating the land with dredged silt from the Potomac, fill from Washington construction and excavation sites was also deposited on "Kidwell Flats." Clean fill was requested by the authorities; however, clean fill was not always sent; particles of construction waste, some toxic to plant life, have since been unearthed. This debris, combined with fresh or decaying organic matter dredged with silt from the river, comprised the soil surrounding the Lincoln Memorial.

As the earlier plantings of bowood died around the Memorial, others were acquired to replace them. Where did these plants, many over 150 years old, come from? To answer this question, it will be necessary to relate how boxwood was selected to be one of the principle plants for landscaping the Lincoln Memorial.

The beginnning on reclaimed land.

Truck load of boxwood possibly from The Eastern Shore, Maryland, being unloaded onto the Lincoln Memorial grounds in 1936.

On September 19, 1919, at the request of Governor Calvin J. Coolidge of Vermont, a committee of The Commission of Fine Arts went to New England to review plans for improving various areas of that region. While in New England, they stopped in Cornish, New Hampshire, to observe some of the statues of Sculptor Herbert Adams, who was a Commission member. Landscaping plans had been drawn up by Landscape Architect Irving W. Payne of the Office of Public Buildings and Grounds, Washington, DC, for the newly constructed Lincoln Memorial. These plans were discussed by the Committee while in Cornish. Attending this meeting, were Herbert Adams, Sculptor; Charles Moore, Chairman; Charles A. Platt, William Kendall, and John Russell Pope, Architects; J. Alden Weir, Painter; James L. Greenleaf, Landscape Architect; and C. S. Ridley, Secretary. The Committee decided that pines, hollies, and magnolias, along with large specimens of yew and boxwood, should be the principle plants around the Memorial. Various opinions were voiced about the planting and the site. Some opinions, as taken from the meeting's minutes, are as follows:

Mr. Greenleaf stated: "Here is one of the great Memorials of the World; I think it is going to be one of the World's greatest monuments, a magnificent thing as I see it, and it seems to me the question of planting it ought to be approached with a great deal of study and consideration for proper effect. I have no doubt it is the case, that funds are limited. Consider for a moment: the country has spent millions of dollars in building the Memorial and is expecting those who have the responsibility of placing the grounds in condition to produce a proper effect with a mere pittance. As I see it that planting ought to be handled with $30,000 at least to do the work adequately and in the way we would like to see it done. Around the foundation and platform terrace there should be bold, strong masses of evergreen of rounded outline, which do not spire up restlessly against the masonry, but form groups of big, broad outlines. This can never be done with hemlock for instance. The planting should be begun right, in a small way if necessary, but preferably with large material. I would suggest starting this planting with the English yew and the box. The foregoing list of Mr. Payne, which we considered, is, I think, an excellent one to start with. On this list are shown half-dozen or more big yew and some large box bushes — quite an interesting list of things."

Mr. Greenleaf suggested that the planting in front of the Memorial should be simple and that a half-dozen kinds of plants should be sufficient.

Mr. Platt called the Committee's attention to the large number of old boxwood plants in the Chesapeake Bay area from which train carloads have been removed. There were many left, he said, however, and a "firm" (landscaping company) might possibly procure them.

Mr. Moore said that Mr. Henlock (Head Gardener for Public Buildings and Grounds, Washington, DC) should be asked to see if any of the plants suggested as suitable for the Memorial grounds were available in the District of Columbia and could be supplied through Col. Ridley's office.

"Mr. Platt suggested that Lewis and Valentine might come down on their prices in furnishing plants for these grounds in view of being identified with the work."

Before the meeting ended, the Committee recommended that Irving W. Payne's landscape plans be redrawn to conform with the Committee's desires. Subsequently, Irving Payne redrew his plans for the Memorial and submitted them to the full Commission of Fine Arts for further study. These revised plans specified locations for the following plants:

*1. *Ampelopsis quinquefolia* var. *engelmannii* — plants [(now *Parthenocissus quinquefolia* f. *englemannii* (Rhed.) Rhed.)]

2. *Buxus sempervirens* — 62 plants

3. *B. sempervirens* var. *suffruticosa* — 333 plants (now *B. sempervirens* L. cv. *Suffruticosa*. *B. sempervirens* var. *suffruticosa* — 594 Lin Ft

*4. *Euonymus carrierie* — 28 plants [(now *Euonymus fortunei* var.__ __ f. *carrierei* (Vauvel) Rehd.)]

*5. *Euonymus vegetus* — 3 plants [(now *Euonymus fortunei* var. *vegetus* Rehd.) Rehd.)]

*6. *Hedera helix* — N/N

7. *Ilex crenata* — N/N

8. *Ilex opaca* — 10 plants

9. *Magnolia grandfolia* — N/N

10. *Pinus mughus* — 14 plants (now *P. mugo* var. *mughus* (Scop.) Zenari

11. *Taxus baccata* var. *adpressa* — 75 plants

12. *Taxus brevifolia* — 70 plants

13. *Taxus cuspidata* — 85 plants

N/N — no number given

(Payne noted that 42 *Buxus sempervirens* plants were available in various public, private, and federal plantings in Washington, DC, but the remainder were to be purchased.)

*These items were vines that were removed in 1928 at Chairman Charles Moore's request.

Payne's new drawings were officially approved with the following notation:

"This planting plan as approved by the National [sic] Commission of Fine Arts of July 27, 1920, is to be followed — with the understanding that it be used mainly as a guide to the placement of the large mass relations of the proposed planting scheme that the proposed flexible arrangement of heights, species and varieties of plant material used be varied commensurate with the requirements of good taste in the use of texture and color of material as an aid to successful planting.

"Plants are therefore to be adjusted at the site when planting thus carrying out the proposed scheme as shown on the 'East Elevation Showing Proposed Planting' for the Lincoln Memorial as approved by the National [sic] Commission of Fine Arts on July 27, 1920."

Several months after the Cornish meeting, James L. Greenleaf wrote E. F. Conklin, Assistant Officer, Office of Public Buildings and Grounds, the following letter regarding boxwood for the Lincoln Memorial:

"April 28th, 1920.
"Mr. E. F. Conklin, Assistant Officer,
"Office of Public
Buildings and Grounds,
"1729 New York Avenue, N.W.
"Washington, D.C.

"Dear Mr. Conklin:

"I received your letter of the 26th inst., inquiring about box bushes that I mentioned to Mr. Payne in connecttion with the Lincoln Memorial and asking that I define exactly the variety desired.

"Speaking broadly there are two varieties of box that you have to deal with, one is the *Buxus suffruticosa* (dwarf box) the other is the *Buxus sempervirens* (tree box). The tree box if in old specimens is generally tall and open, while the dwarf box is more compact.

"Large specimens of both kinds are suitable for use at the Lincoln Memorial, but the tall open specimens of tree box if used should preferably be for back-ground generally speaking. The fine compact irregular forms of old dwarf box should be grouped according to circumstances in masses of interesting contour. Most of the filling out and development of form in the box planting at Lincoln Memorial should be with the old specimens of the suffruticosa.

"Replying to the question as to where such material may be secured, I would suggest as follows:

"There are several firms that look up and do transplanting of old box bushes. I believe Mr. Small, a florist of Washington is one, another is Louis & Valentine of New York, Roslyn, still another is Smyth of New York City used to do this work.

"Hoping that the above answers your inquiries, I am,

"Yours very truly,
"(signed) James L. Greenleaf
"(a copy for Mr. Payne)"

Correspondence reveals that, in or about 1927, the Small Co. hired Arthur Elliott of Arlington, Virginia, who told of touring private estates in Virginia and the Carolinas, seeking boxwood for the Lincoln Memorial. Evidence has been found, upon search in the U. S. Archives, that in 1924, Arthur Elliott did indeed supply from two and possibly more sites in Virginia some of the early boxwood for the Memorial planting. Official records indicate that he sold approximately 248 linear feet of English boxwood that he had bought for $975. Sources from the Carolinas were not recorded.

In addition to Mr. Elliott's contribution, other individuals during the 1920's sold, donated, or offered to sell large old boxwood plants to the Office of Public Building and Grounds officials for the Memorial planting. Wilbur S. Richardson of Richardson & Co. (Gardeners), Leesburg, Virginia, bought several boxwood from various estates and sold them for the Memorial planting. Two of his sales included $380.00 for seven plants of Common and English boxwood from Carbon Run, Virginia, and $95.00 for a single boxwood plant from the Presbyterian Church in Leesburg, Virginia.

Not all of the boxwoods were provided by professional collectors. Some came from private citizens. Emma J. Fry, then of Washington, DC, is one of several who sold boxwood to the Government and signed a contract binding the agreement. Her contract states:

"October 30, 1922
"Lieut. Col. C. O. Sherrill,
"Officer in Charge,
Public Bdlgs. & Grounds
"1729 New York Avenue
"Washington, D.C.

"Dear Sir:

"Replying to your letter of October 28, 1922, regarding previous verbal arrangement with your representative, Mr. Irving W. Payne, I the sole owner, agree to sell you a specimen plant of Dwarf Box, approximately 6-1/2 feet in height by 6 feet spread, located in my front yard, for the total sum of fifty (50) dollars, payment to be made after the removal of the plant at your expense; and the excavated soil, not included in the ball of the plant, is to be replaced free by your office. Plant is to be removed within six months or earlier from date.

"The above plant is not encumbered in any way by liens of any kind, and is free of any claim by any other parties.

"As per your request, the undersigned party is retaining the carbon copy enclosed in your letter.

"Yours very truly,

"Mrs. Emma J. Fry (signature)

"319 New Jersey Ave. SE

"Washington, D.C."

Probably the first published account of boxwood being donated for the Lincoln Memorial planting, a little less than 3 months after Irving Payne's plans were approved by The Commission of Fine Arts appeared in the (Washington) Evening Star, p. 7, on September 17, 1920. This article reported the gift of seven very old boxwood for the Lincoln Memorial planting and appeared thus in part:

"The oldest trees in the District of Columbia are in the process of being transplanted to the Lincoln Memorial grounds in Potomac Park. The seven trees, which are box, were probably first planted long before President Lincoln was born, according to Charles H. Heitmuller, from whose place on Sargent Road in Brookland (a section in northeast Washington, DC) the trees are being taken. Mr. Heitmuller moved to this house more than sixty-five years ago, and says the box were then well-sized bushes. . . . The trees have been allowed to grow without trimming, have attained graceful shapes and should be a great adornment to the grounds around the Memorial."

One particular plant worthy of comment is the very old plant that once grew in the garden of the Corcoran House at 1611 H Street N.W., Washington, DC. It was probably the largest boxwood to be moved to the Lincoln Memorial grounds. Unfortunately, many of its lower branches died after transplanting, and smaller boxwood had to be planted close to its base to improve the appearance of the area.

A very large old boxwood from the house of Civil War General John A. Logan in the District of Columbia was offered for sale by his daughter, but authorities felt it was too risky to transplant, because it required a 13-ton ball to be moved, and would suffer the same fate as the Corcoran plant.

Although many large and very old boxwood plants were established around the Lincoln Memorial during the 1920's exact placement records were not kept, and it is impossible to determine the origins of the various plants. However, even though history does not permit us to know the origins of the earliest Lincoln Memorial boxwood, many of these plants are still outstanding specimens and, as such, are fitting memorials to President Abraham Lincoln.

Editor's Note: An interesting sidelight to this story concerns several boxwood presented to the Commission of Fine Arts by a wealthy lady from

South Carolina. She intended the plants be used to help green-up the nation's capital. Upon hearing that her "contributions" were to be used "around the Lincoln Memorial," Southern pride caused her to refuse the transaction.

Malcolm Matheson, Sr. purchased the plants from her for his River Farm estate. The property has since become the Headquarters of the American Horticultural Society. The boxwood still thrive at River Farm.
M.C.K.

The Lincoln Memorial with boxwood and yew more as it looks today.

Photos in this article courtesy USDA and The National Arboretum.

PATTERNS FOR A TRADITIONAL BOXWOOD GARDENS

Society of the Midwest Bulletin

Boxwood enthusiasts who wish to plan their gardens without professional help often look for inspiration in the geometric designs which characterized the elaborate parterre gardens of the Renaissance. These gardens were formal in nature and many incorporated boxwood. The dwarf and larger forms of "man's oldest garden ornamental" were used as borders, as specimen or accent plants, and as hedges to provide privacy. Often these large, magnificent gardens were composed of variations on a single unifying theme. Often today's gardner, who seeks organized simplicity on a modest scale, finds an appropriate design in a single segment of a parterre that may have covered acres.

On the next page we have reproduced two geometric designs or patterns, one in two variations, which lend themselves to boxwood gardens. We know one garden patterned after the square at lower right. In this small garden the four "corners" are spaced around an oak tree which becomes the central point of the rectangle.

These designs can be scaled to fit your space, whether it is very small or quite large. They can be planted solely with boxwood, combined with perennials, or with herbs, to carry out an historic association. Ground covers may be used but as they invariably crowd into the boxwood root area many gardeners prefer all-season mulches such as wood chips. The beds can be cut into the turf or edged with brick. Paths can be turf, brick, or any appropriate surface.

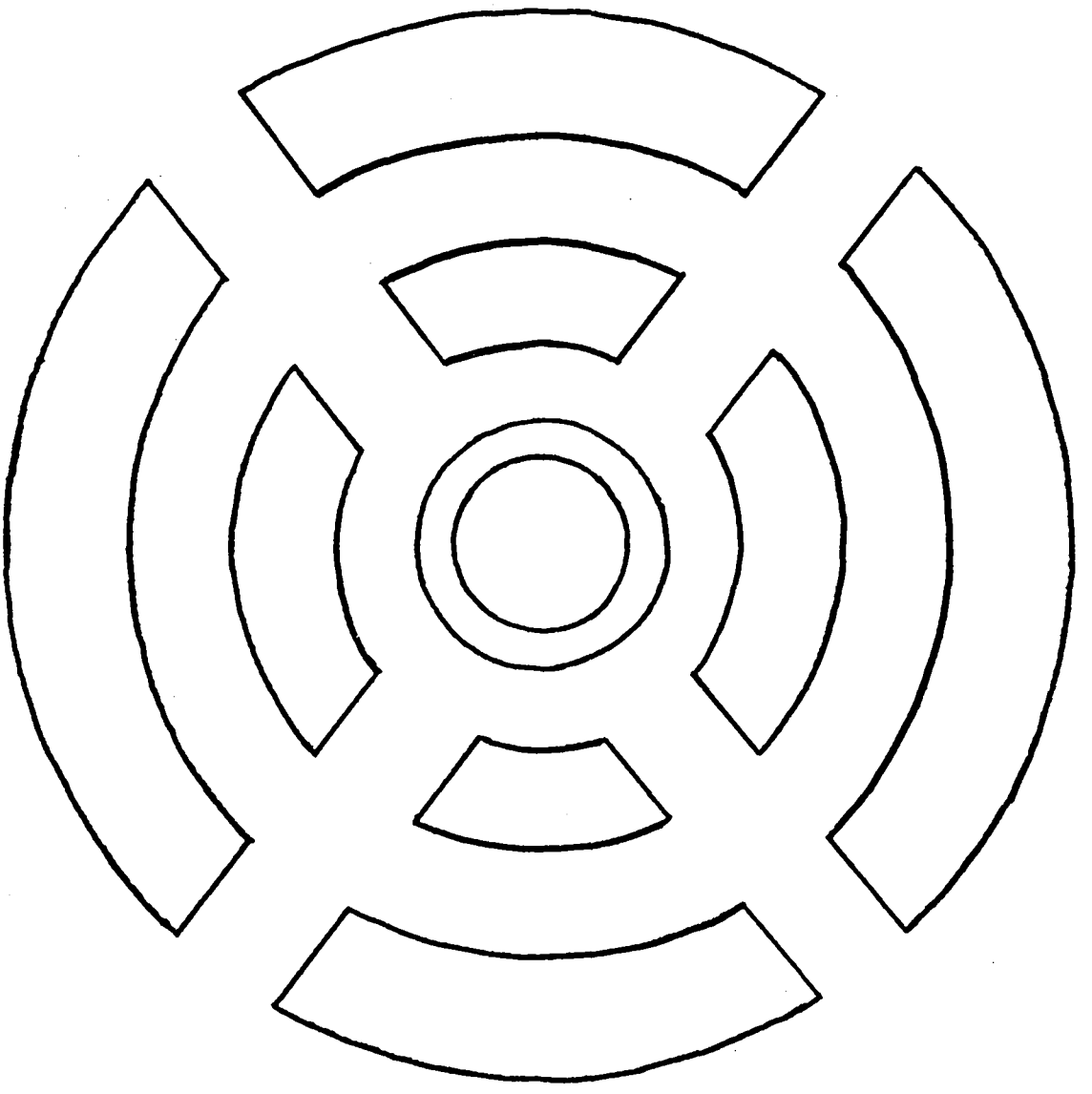
A garden could be started with only the inner section of the broken circle design. The beds which form the squares could be lengthened or broadened to form rectangles. And, if garden space is large, they can be repeated to form larger squares or rectangles.

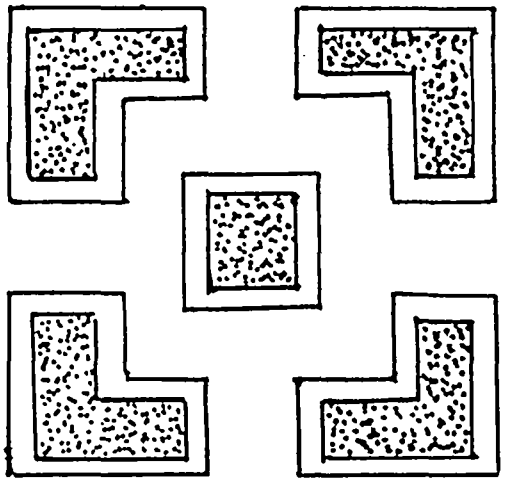
(Continued on next page)

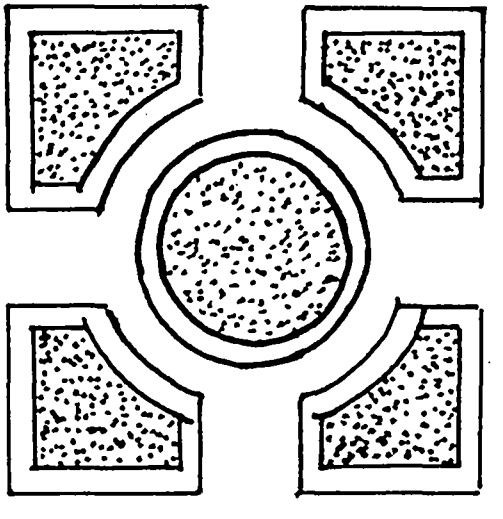
PATTERNS FOR TRADITIONAL BOXWOOD GARDENS

from

The Boxwood Society of the Midwest Bulletin







Winter Damage Or Injury

Boxwood in the Landscape

VPI & SU Pub. 248

Boxwoods are susceptible to winter damage and may show the following symptoms:

1. The foliage is reddish-brown, yellowish or grayish green or there is complete loss of color.

2. Death of entire branches especially in the middle and apical parts of the crown.

3. The occurrence of sunken areas in the bark of the trunk just above the ground line or the crotches, and along the sides of main branches. Examination of the sunken bark may show that it is brown throughout or contains brown streaks and that in many places it has separated from the wood so that patches of considerable size can be stripped off. Cracks may develop in the stem.

Boxwoods that are low in vitality are more susceptible to winter damage. Plants that experience a growth check during the summer and are stimulated into untimely growth by rainy periods in the fall and do not have time to harden off their growth before freezing weather are susceptible to winter damage. In mild or open winters, plants that were properly dormant in the fall may be coaxed into cambium activity on warm days, especially if they are exposed to direct sunlight. The recurrence of freezing weather injures or kills the new tissue thus formed, and sometimes causes the bark to freeze and separate from the wood.

Water loss may cause severe damage to boxwood. This loss occurs in winter when high winds or temporary warm weather causes a plant to give off an unusually high amount of moisture. This coupled with frozen ground which prevents roots from taking up moisture for the plant causes browning or burning of the foliage.

How to Combat Winter Injury

Various management practices listed below may help to prevent damage.

1. Make sure the plants enter the dormant season in a healthy and vigorous condition with adequate soil moisture. If needed apply fertilizer before July and do corrective thinning during the spring. Check especially to see that the center of the plant is free of dead leaves and other debris.

2. During dry periods in the spring, summer, fall or winter, water as needed.

3. Provide wind protection for plants in exposed situations by using snow fences or lattice frames covered with burlap or pine boughs stuck in the ground.

4. Boxwoods recently transplanted will benefit if partially shaded or barriers are erected to cut down on wind penetration.

5. Provide a mulch of wood chips, leaf mold, or similar materials. A mulch protects by preventing rapid temperature change at the soil surface, deep penetration of frost, and excessive loss of surface water.

6. Remove snow from bovwood during or after a snow storm or soon as practical by shaking the bush with a broom or stick. However do not attempt to remove snow if branches are frozen as breakage will occur. The weight of heavy snow may cause the stems to break especially if they are weak.

7. Large American boxwood may be protected against snow damage by wrapping the outer branches with strong nylon cord. Tie the cord securely to a low branch, pressing the boughs upwards and inward; wrap cord in an upward spiral around the bush. having cords 8 to 10 inches apart. Have cord tight enough to prevent breakage from excess weight of snow or ice but not enough to exclude air circulation around the plant.

Propagation

Boxwood is normally propagated from cuttings although propagation from seed is possible. In fact, garden enthusiasts find the growing of boxwood from seed interesting because the seedlings produced are not exactly alike. The form might be upright, weeping, globe, or dwarf and texture of the foliage will vary. Ability to withstand winter conditions also varies with seedling boxwood.

Common methods for propagation by cutting are:

1. In sand or sandy soil, in shade.
2. In plastic-covered chamber.
3. Under an outdoor mist system.
4. In greenhouse, plastic house, or cold-frame.

In the first method, place cuttings of tree box up to 16" long in sand or sandy soil during summer months! keep area moist; protect from direct sun-

light and wind. After a good root system develops, transplant to a row in the garden. A partial shade is beneficial until the plant becomes well established in the field. This shade could be provided by a section of snow fence.

Propagating in a plastic chamber is a simple and inexpensive method. For this method use a flat or cantainer, rooting medium, and a plastic cover. Steps:

1. Select a flat or No. 10 can.
2. Punch several holes in the can for drainage.
3. Put a ½" layer of fine gravel or stones in the bottom.
4. Fill container with medium, such as sharp sand, or 50% mixture sand and peat moss, or vermiculite.

Protection for Boxwood

Newly set-out boxwood benefit from a temporary burlap screen or snow fence which provides shade and wind protection. Do not let the burlap tough the foliage.

Mulch helps protect the soil against rapid temperature changes and lessens the depth of frost penetration in winter.

Heavy snows often crack the stems. Carefully brushing snow off will help minimize damage. Developing strong stems through proper thinning is also important because they are able to withstand heavy snows or sleet better than weak plants.

Spraying boxwood plants that have a tendency to winter burn with a anti-desiccant spray in late November will help to lessen winter burn or browning. A second application in late January is often recommended.

VPI & SU Pub. 248

WINTER WATERING: The most important watering of the year is the long, slow soaking good boxwood gardeners give their plants just before the ground freezes and winter sets in. This is one protection against winter kill.

WINTER PROTECTION (based on 1977 experiences): for cherished, larger boxwoods with unbroken eastern exposure we suggest applications of an anti-dessicant (such as Wilt-Pruf). Make first application after the first killing frost; make second in late November when temperature is about 45 to 50 degrees F.

Mound small plants (especially those planted this year) with oak leaves in early winter. It won't hurt to cover plants completely.

MARK YOUR CALENDAR

May 9, 1979

19th Annual Meeting

The American Boxwood Society

at

Blandy Experimental Farm

Boyce, Va.

ANOTHER TOUR, SPRING 1979

At the October ABS Board meeting the members voted to have a second tour in the spring of 1979. Those going on the first tour to the Hallowell's "Deerfield", "The Rolands", Rydal, Pa., the Wolfe's "Tockington", Jenkintown, Pa., Bryn Athyn Cathedral, Bryn Athyn, Pa., Quaker Park, and The Biddle's "Andalusia", Delaware, were so enthusiastic that considered a second tour would be successful.

President Al Beecher named Kay Ewert to chair the proposed tour.

Any information of an interesting group of houses and gardens would be most helpful. Motel and food accessibility is important. Let Kay hear from you with your ideas. Her address:

Mrs. Thomas Ewert
The American Boxwood Society
Box 85
Boyce, Va. 22620

THE AMERICAN BOXWOOD SOCIETY
INTERNATIONAL BOXWOOD REGISTRATION

Buxus _____ _____
(species) (variety or subspecies, if any)

Cultivar name submitted for registration _____

Name of registrant _____ Address _____

_____

Place of origin _____ Date of origin _____

Originator or selector _____ Address _____

_____

Has the name and description of this cultivar been published? Yes _____ No _____

If yes, cite reference _____

_____

If no, a description for publication in The Boxwood Bulletin must accompany this application.

If sport, name of parent _____ Age of type plant_____

If of seedling origin, name of known or probable seed parent _____

Name of male parent, if known _____ Age of type plant _____

If commercially available, nursery and date of introduction _____

_____

If patented, plant patent number _____ Date _____ Assignee _____

If trademarked, trademark number _____ Date _____

Herbarium specimen sent? Yes ____ No ____ If no, has herbarium specimen, photograph, painting or drawing been deposited in an herbarium? _____ If so, where? _____

_____

Return to:

Bernice M. Speese

P.O. Box 1589

Williamsburg, VA 23185

Signed: _____

Date: _____

Cultivar Name

Must consist of no more than three words, preferably only one or two words.

If registrant did not name the cultivar, cultivar name should be followed by the name of person(s) naming and describing the cultivar.

Cultivar Description

Required

Distinguishing characteristics.

Leaf color, size and shape.

Size of type plant.

Location of type plant.

Desired

Any available data such as flowering, fruiting, seed germination, hardiness and awards, with dates received.

Photograph of type plant.

Life-size photograph of terminal portion of a branch.

Herbarium Specimen

May be of any convenient size up to ten or twelve inches in length.

Preferably there should be three specimens. The American Boxwood Society would like to keep one specimen and send one to the herbarium of the National Arboretum and one to that of the Arnold Arboretum. I would be glad to prepare the herbarium specimens for the registrant if fresh material in a plastic bag (no moisture needed) is mailed to me at the time of application for registration of the cultivar.

Dr. Bernice Speese ABS Registrar

The American Boxwood Society named Dr. Bernice Speese the Registrar for International Boxwood Registration. The American Boxwood Society is the official, international, repository of information, identification of specimens, cultivars, and the naming of boxwood specimens.

Dr. Speese is the usccessor to Dr. Burdette L. Wagenknecht of St. Louis, Missouri. The Wagenknecht registration list was published in The ABS Bulletin, Vol. 4, No. 3, pgs. 35-40, Jan. 1965. Since that time there have been numerous cultivars and "Sports" which have not been added to the official identification list. Dr. Speese, with her broad professional background and association with Dr. J. T. Baldwin, Jr., one of the leading authorities on boxwood, is striving to update registration as much as possible.

Dr. Speese held a Blandy Fellowship, University of Virginia, 1942-1946. In 1946-1976 she taught in the Department of Biology, The College of William and Mary, and from 1946-1974 was research associate of Dr. J. T. Baldwin, Jr. Since 1976 she is Associate Professor of Biology, Emeritus, The College of William an dMary. Dr. Speese is 2nd vice president of The American Boxwood Society.

The American Boxwood Society is most fortunate to benefit from the background and experience of Dr. Speese. Dr. Speese and the Society would appreciate any member or friend sending her information and specimens in their possession. Using the registration form would be helpful in updating the official listing entrusted to the American Boxwood Society.

LETTER FROM HENRY J. HOHMAN

KINGSVILLE NURSERIES,
Kingsville, Maryland

June 29, 1964

Rear Admiral Phillips
Heronwood Nursery
Upperville, Virginia

Dear Admiral Phillips,

The Buxus you purchased from me this past spring is properly named; Buxus microphylla variety 'Curly Locks'.

This is the Boxwood that I was centainly sure Mr. Joseph Alsop called *'Climbing Box'*, knowing that he had Curly Locks among his plantings.

Perry Wheeler has been planting Buxus microphylla 'Curly Locks' in many of his garden plantings in N.W. Washington, and trained them in espalier forms on walls, due to it's making strong irregular growths that are perfect for this work. When Mr. Alsop wrote the article and called attention to Hohman's climbing boxwood, I could have no other Boxwood in mind, except 'Curly Locks' knowing how perfect it can be trained. Those you received from me had been clipped back on occasions to develop heavy bases and well filled out plants. There are still a few old plants I have here of Curly Locks that are now around 7 ft. in rangy form due to not having been clipped back at any time and simply developed that strong rangy upright twisted form.

I wrote to Mr. Alsop to get information to ascertain the proper identity, if by any chance he referred to any other Boxwood other than Curly Locks, and he was out of the United States and a reply was not received until his return May 20th. At that time he sent me a small sprig clipped from the trained Boxwood which he had called the Climbing Boxwood, and now I readily know that it is not Curly Locks that he referred to, but is Buxus microphylla *Kingsville No. 2-A.*

This Boxwood was reproduced and grown due to the fine broad bush form it developed, usually 5/6 ft. wide when only 4/5 ft. high. It is evident that Mr. Alsop, when he first received a very small plant or two of Buxus microphylla Kingsville No. 2-A, allowed it to develop a strong single leader growth, and then trained it on his wall.

I have stressed for years the importance of proper names being constantly retained with all plants, rather than simply giving them a *NEW NAME,* which always creates confusion.

Buxus microphylla, var. Kingsville No. 2-A, was a mutation that developed from Buxus microphylla, var. compacta, which is known as the Kingsville dwarf Boxwood. This mutation occurred about 1935 or 36, and if by any chance, I did not let Mr. Wheeler have this old specimen for one of his planting, the original would be growing somewhere among my collection in the weeds area, but I have not been able to get the time to check and make certain.

I am going to send you during the week of June 29th, ten small plants of Buxus microphylla, var. Kingsville No. 2-A, from 3" pots which is the only size I now have on hand in any quantity at all, and you will note the broad habit of growth, rather than rangy form. If you desire to train these in form for espalier, simply allow the one center growth to develop faster by pinching back all laterial growths and your results will be similar to Mr. Alsop's plant. These will come to you and Mrs. Phillips with my compliments for your garden.

By no means cast aside, *Curly Locks,* which is certainly one of the finest among all Buxus and can easily be trained in any form desired. It has gained fine recognition fairly well over the country, and entirely different from all other Buxus.

The collection of Buxus here has now reached over 200, which includes the collection of Dr. Anderson made for The Arnold Arboretum from Vardar Valley in Yugoslavia back in 1934-35, and the collection he made from the same area for the Missouri Botanic Gardens. Among this large collection, Buxus semp. 'VardarValley' is the finest among them all, with Buxus Semp. Anderson, *No. 353-35,* being next best. *353-*35, g r o w s in perfect solid upright pyramidal form and has leaves almost identical to those of "Vardar Valley", which was originally known only as Anderson *353-35*

Any additional information you may desire I will be glad to help you if I can.

The physical condition has not been good all spring and has given me lots of bother. The season's weather has not helped matters and between the two, there has been much not accomplished.

I do hope this finds you and Mrs. Phillips very well, and with every good wish to you both.

Most sincerely,

(signed) Henry J. Hohman

Editor: Found foregoing letter in files and considered it interesting in connection with Dr. Speese's updating Boxwood Registration. ABS Board thought the Society membership should share Dr. Hohman's comments.

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THE AMERICAN BOXWOOD SOCIETY

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DUES AND SUBSCRIPTIONS

Regular membership dues of The American Boxwood Society are now $5.00. This includes a subscription to *The Boxwood Bulletin.*

Non-member subscriptions are for groups and institutions such as botanic gardens, libraries, etc. These are $6.00 a year, and run by the calendar year.

The Boxwood Society year runs from one Annual Meeting to the next; from May of one year to May of the next year. Those joining the Society at other times are sent all the *Boxwood Bulletin* issues for the current Society year, beginning with the July number. Their dues are then again due and payable in the following May. This was voted by the Society in order to lighten as far as possible the heavy work load of our busy Treasurer.

At the present time any or all *Bulletins* are available, back to Vol. 1, No. 1 (Vol. 1 consists of three issues only, there was no Vol. 1, No. 4.) Price per single copy is $1.50.

Besides regular membership dues at $5.00 per year, there are other classes of membership available: Contributing, $10.00; Sustaining, $25.00; Life, $100.00; and Patron, $500.00.

Gift memberships are announced to the recipients by boxwood-decorated cards which carry the information that *The Boxwood Bulletin* will come as your gift four times a year.

Members of The American Boxwood Society are reminded of the 1968 IRS decision that contributions to and for the use of the Society, are deductible by donors as provided in Section 170 of the Code.

FOR YOUR ADDRESS BOOK

If your letter is concerned with

Membership, new or renewal
Payment of dues
Donations to research programs
Change of address
Gift Membership
Ordering back issues of the Bulletin
Ordering Dr. Wagenknecht's List

Write to:

Mrs. Thomas E. Ewert
American Boxwood Society
Box 85
Boyce, Virginia 22620

If your letter is concerned with:
General information about the Society
Advice concerning boxwood problems or cultural information
Boxwood selection

Write to:

Mrs. Linda G. Jones
American Boxwood Society
Box 85
Boyce, Virginia 22620

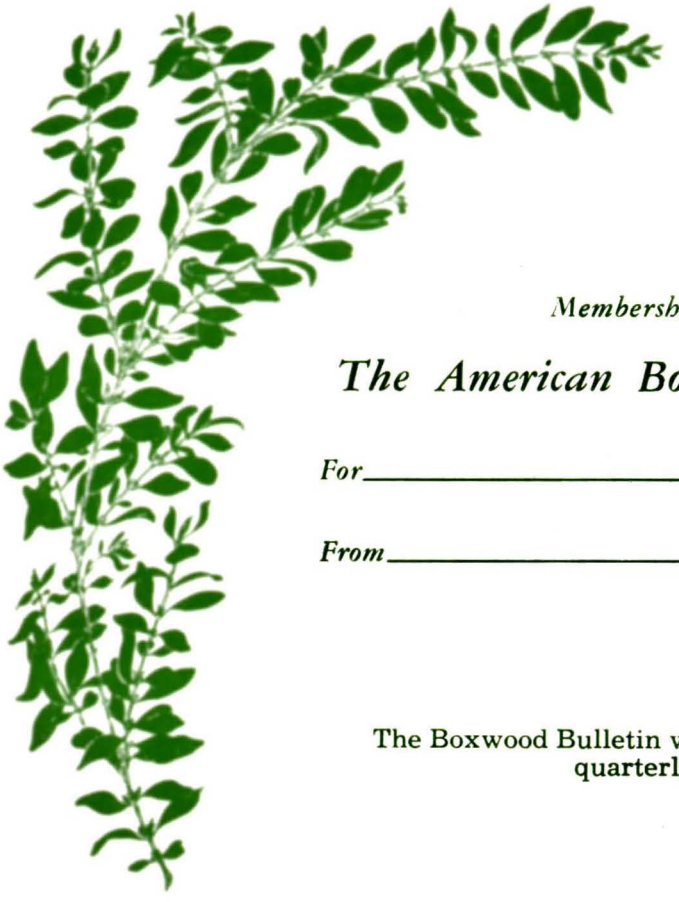
In some cases depending upon the nature of your request, your letter may be forwarded to a member of the Board or another appropriate member who can provide the help you have requested.

You are also welcome to write direct to the President of the American Boxwood Society:

Professor Albert S. Beecher
Department of Horticulture
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

If you have contributions for the Boxwood Bulletin - articles, news notes, photographs, suggestions of anything of probable interest to boxwood people, it saves time to direct them to the Editor:

Mrs. Charles H. Dick, Editor
The Boxwood Bulletin
514 Amherst Street
Winchester, Virginia 22601



Membership in

The American Boxwood Society

*For*_____

*From*_____

The Boxwood Bulletin will be sent to you **quarterly.**

Christmas Gift Membership

in the

American Boxwood Society

If you are looking for a Christmas gift for a friend, why not give a membership in the American Boxwood Society. During the year, they will receive four issues of the *Boxwood Bulletin.*

Above you see a reproduction of our gift card just as it would go to one of your friends announcing your gift membership. The cost is $5.00 for one year and $10.00 for two years. Send your gift request to the Treasurer, Mrs. Thomas Ewert, P.O. Box 175, Boyce, Virginia 22620.