



HOLLY LETTER



PUBLISHED BY THE HOLLY SOCIETY OF AMERICA, INC.

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25 Ames Road, Morristown, N.J. 07960

More People Knowing and Growing More Holly

SPECIAL HOLLY LETTER NO. 60

JANUARY, 1978

A MESSAGE FROM THE PRESIDENT

As we begin our thirty-first year, the members of the Holly Society of America can be justly proud, especially those charter members who are still counted among the ranks.

From a small beginning we are grown to a membership which approaches 1,000. We have been designated as the International Registrars of the genus *Ilex* and have been instrumental in fostering a high degree of research on the genus. We can claim credit for the massive hybridization programs, conducted privately and professionally, that have resulted in numerous improved cultivars.

While all this is laudable, we as a Society cannot rest on our laurels and enjoy the fruits of our labors. No society can maintain a status quo; it must either rise or fall.

In 1976, the Trustees adopted a slogan, "More people knowing and growing more holly." Indeed, this phrase should not be termed a slogan but rather the continuing goal and philosophy of the Holly Society of America; and of every member whose name graces the official membership list.

Dispite the thousands of words published by the Holly Society of America, whose sum I am certain exceeds all the writings published before the inception of the Society, I have found in my travels an appalling lack of information and knowledge concerning the culture, varietal variations, adaptibility etc., about a plant which is universally admired and desired by both the general public and horticulturists.

While it is we, your elected officers and trustees, who transact the business affairs of the Society, it is you, the individual members, who must bear the brunt of the work if we are to be numbered among the successes; not only be spreading information to

your friends and acquaintances but, more importantly, by inducing strangers to embark upon the rewarding task of growing their own holly.

This may be accomplished in many ways, through public displays in local libraries, municipal buildings, and banks, all of which will be happy to accept artistic arrangements of holly. These exhibits must include a message that the donor will be glad to furnish information on the culture of holly. You can volunteer to speak before garden clubs and service organizations -- the Society has visual aids available for your use. Your local chapter can lobby for display classes at your local flower shows to inform people that holly can be grown in your environment.

The methods of calling attention to holly are limited only by the extent that you, the individual members, limit your energies.

Remember, no program, no product has achieved success on its own merits. Under one guise or another, the desire to join the ranks or own the product has been created.

In the near future, a program will be announced by your officers to achieve one step in the desired direction. Its success or failure will rest entirely in your individual hands.

We need your help. As individuals you have conferred an honor and privelege on us, your elected officers and trustees. Don't let it end there. Inform us of your ideas and goals. I am certain that I speak for my fellow officers when I state that we will do our best to incorporate them in the actions of the Society and will keep you informed, either individually or collectively, on the progress of your communications.

WINTER '76 - '77 AND HOLLY

INTRODUCTION

The winter of 1976 - 1977 will be long-remembered in more ways than one. Losses of life and plant life were larger than most of us realize. I believe that it is safe to say that millions of dollars worth of ornamental trees and shrubs were killed or badly damaged. Possibly some small nurseries were put out of business, at least for this spring. The purpose of this report is to advise and guide gardners and nurserymen about what to plant and what to avoid in future years.

This report is not a scientific nor an academic one, such as an arboretum would print, but the printing of information as it comes from people who love their plants and desire to tell us what happened to their plants. From all this information, it is hoped that we can present something which will set forth the highlights of winter 1976 - 1977 experiences and will provide guide-lines for future plantings of hollies.

Before we get too involved in this report, we thank everyone who has been so thoughtful in letting us know how their hollies fared during the most severe winter in our history. Even with the goodly number of people who did respond, we have only a very small sample of what the actual losses were.

Summaries are usually at the end of a report, but we are reversing the order and giving you good news first.

Generally, hollies did better than other broad-leaved trees and shrubs. In an article in the *Pittsburgh Post-Gazette*, Thomas J. Porter noted that Louis Wissenbach of Squirrel Hill Nursery said that everything will have to be trimmed back; and that azaleas will be in extremely short supply, because they were hardest hit. Mr. Wissenbach also said that Japanese holly was hard hit, but American holly held up well during the cold. These were Grace Hybrid hollies. Needle-type evergreens, such as yews and junipers, were burned to some degree.

When you read all the reports, you will find that the hardy

forms of American hollies really do withstand very cold weather and high winds of cyclonic force and still survive. By carefully reading all these reports, you will conclude that English hollies are successful only in very limited areas, where they are not subjected to high winds and temperatures much below zero.

Heavy snow-cover is of tremendous protection for all hollies. However, it is amazing how much hollies will stand when there is no snow-cover.

The next group of hollies that appears to be very hardy are the Meserve hybrids: 'Blue Angel', 'Blue Girl', 'Blue Princess', and 'Blue Prince'. They withstood -15°F without any injury.

Ilex pedunculosa withstood -15°F without any injury to the wood.

The next most hardy holly appears to be *Ilex x aquipernyi* 'San Jose'. It withstood -15°F and suffered no wood injury. High winds appear to be its "Waterloo."

To date, we do not have a Japanese holly on the market which will withstand -20°F without being badly winter-burned. The winter-burn occurs usually in March. Reports show that nearly all the common cultivars, such as *I. crenata* 'Convexa', 'Rotundifolia', 'Hetzi', 'Helleri', and 'Northern Beauty', were frozen to the ground in many areas, where *I. crenata* 'Stokes' and 'Green Lustre' survived.

E. Sam Hemming, who has written for the *American Nurseryman* for many years, stated, "We have another reason for not ignoring too completely the seedling-raised plants. This past severe winter has killed all the clones of Japanese holly, including 'Rotundifolia', 'Compacta', 'Helleri', and 'Convexa'. The loss has been great. We still have a few old plants, raised from seedlings many years ago, which survived. Of course, to keep up with present-day thinking, we stopped raising them that way."

Finding a Japanese holly, which will survive -25°F and not sun-scald in March, is like finding the needle in the haystack.

However, we have been raising hundreds of natural hybrids of *I. crenata* 'Stokes' x 'Hetzi' for years and have found several which have never even had a leaf burn in the past 12 years, after surviving -25°F. 'Pride Hybrid 18' is one of these. We had it growing in four different locations with no injury last year. We think it merits further testing.

Orlando S. Pride

To begin the presentation of this material, we are reporting areas which had the most severe weather, namely, -25°F.

Donald Zaum
Wasco, Illinois

So far this winter has been a disaster. I have never seen broad-leaved evergreens in such poor shape. We had a dry fall (summer also), and very little snow this winter. And it has been very cold since October 1. The ground is frozen six feet down. The temperature has fallen to -25°F a number of times and to -27°F in January. Strong winds, too. All the hollies are brown on the south side, except those which are under pines.

Please excuse my not writing you before this (May 11). After the hollies (these are *Ilex opaca* Grace Hybrids) were defoliated, new shoots started to come out a couple of weeks ago. We have had an early spring and all the Exbury rhododendrons are now in bloom. New holly shoots froze at -24°F; now new shoots are coming. What a spring! All hollies--opacas as well as Meserve hybrids--had their tips killed, and the new growth is coming farther back. It appears that it will result in thicker growth. Maybe this winter will have its good side.

Ilex crenata was killed to the snow-line.

I am surprised to find that the mollis azaleas and Exbury

rhododendrons look very good. P.J.M. came through with no burning, but other rhododendrons show a lot of burning. Of the so-called evergreen azaleas, only Pride's pale lilac has full bloom. All my holly cuttings, which were in coldframes, are dead.

Orlando S. Pride
Butler, Pa. 15217

We had -25°F to -30°F a number of times and high winds up to 50 miles per hour. Fortunately, we had a very heavy snow-cover of more than 24 inches.

One row of *Ilex opaca* Grace Hybrids, planted as a windbreak, was badly burned on the west side, but still had a few green leaves. All these hollies are in good condition on the east side; there is no indication of winter-kill or twig damage. All the other Grace Hybrids, which were in places protected from the high winds, are very green. This is not true of most of the other named hollies. I have taken color pictures showing hybrid rhododendrons growing along side of Grace Hybrids, which are burned to the ground, while the foliage on the Grace Hybrids is a very attractive green. I have taken another color picture of what we thought to be a hardy form of *Ilex aquifolium* growing next to a Grace Hybrid holly. The hardy form of *I. aquifolium* is frozen to the snow-line, while the Grace Hybrid is in an excellent condition and still very green. Many opacas are badly burned throughout our city, but most will recover. Any holly with southern origin, such as *I. attenuata* 'Foster No.2', is generally frozen to the ground. I have seen quite a few Japanese yews, which look as if a blow-torch had been used on them.

The good news is that Mrs. Meserve's 'Blue Girl' went through the winter, without any injury, in my garden in a very protected place. Small plants of Mrs. Meserve's 'Blue Angel' and 'Blue Princess' look very good; they were under snow. 'Blue Prince' was badly injured.

The female form of *Ilex x aquipernyi* from the Arnold Arboretum dropped all its foliage, but had very little winter-kill. The male form from Joseph Gable is badly burned and has considerable winter-kill.

Ilex glabra is badly burned; these plants were growing in an open, windswept field. I have been growing this holly for 45 years, and it never suffered any kind of injury before this winter.

Hybrid 'Nellie R. Stevens' is frozen to the snow-line. *Ilex yunnanensis* is badly burned, but has little or not twig damage. *I. pedunculosa* foliage is slightly burned, but no winter-kill.

My one plant of Joseph McDaniel's trihybrid or *I. cornuta* x *I. aquifolium* x *I. pernyi* is badly damaged or killed to the snow-line, even in a protected location.

All the named varieties of *Ilex crenata* were damaged seriously, with very few exceptions. *I. crenata* 'Convexa', 'Hetzi', 'Rotundifolia', and 'Northern Beauty' were winter-killed to the snow-line. *I. crenata* 'Stokes' had very little burn; 'Green Lustre' and 'Tiny' had some burn and some winter-kill. Finding a Japanese holly, which will not be sun-scalded in the spring in this climate, is like finding a needle in a haystack. However, we have found one of our hybrids which has not been injured in any way for the past 12 years. We had it planted in four different locations last winter and, much to our surprise, not a leaf was browned by the severe winter. It is 'Pride Hybrid 18' and has survived -25°F and high winds. It looked so well this spring that a very ambitious competitor stole 3,000 cuttings from our stock plant!

Steven Schroeder
Evansville, Indiana

Good snow-cover with temperatures dropping to -24°F. Very

little damage can be reported on the *Ilex opaca* cultivars. There is some wind-burn on 'Longwood' and 'Louise'.

The Grace Hybrids proved to be the most hardy of the opacas this winter.

All the *Ilex x meserveae* hybrids, I am happy to report, are absolutely untouched by the cold--no winter-burn and no die-back.

Ilex aquifolium cultivars are winter-burned, and there is some die-back.

The interspecific hybrids 'Nellie R. Stevens' and 'Edward J. Stevens' have moderate to severe wind-burn, but no die-back yet. 'Lydia Morris' has wind-burn but only slight discoloration of the foliage. 'San Jose' (*I. aquifolium x pernyi*) proved to be the most hardy of the group. The *rugosa* and *cornuta* crosses and the *latifolia* by *rugosa* crosses proved to be completely unhardy, with the *cornuta* crosses badly winter-burned and having considerable die-back. *Latifolia* crosses appear to be killed to the ground.

Following is a list of hollies which I am growing in areas exposed to wind and sun:

Ilex opaca 'Louise', 'Merry Christmas', 'Maurice River', 'Miss Helen', 'Johnson', 'Sleigh Bells', 'Valentine', 'Red Spice', 'Albert', 'Old Heavy Berry', 'St. Mary', 'Longwood Gardens', 'Morgan Gold', and 'Martha's Vineyard',

Ilex x meserveae 'Blue Boy', 'Blue Girl', 'Blue Prince', 'Blue Princess', and 'Blue Angel'.

Ilex aquifolium 'Butler', 'Father Charles', 'Brownell Special', and 'Belgica'.

Interspecific hybrids: 'San Jose', 'Nellie R. Stevens', 'Edward J. Stevens', 'Lydia Morris', *cornuta* (Callaway) by *rugosa*; *rugosa* by *cornuta* (Hicks), *rugosa* by *latifolia* (Murray).

Mrs. Cleveland Peter Stickel
Cincinnati, Ohio 45244

Two days in January -25°F and -24°F. Many days during the month the temperatures hovered below zero; these temperatures were far below normal.

All *Ilex opaca* trees are still green.

Ilex x meserveae 'Blue Angel', 'Blue Prince', and 'Blue Princess' are in excellent condition.

Eighteen plants of *Ilex cornuta* are all brown, except branches next to the ground.

Five cultivars of *Ilex aquifolium* have brown leaves, and the Japanese hollies show some foliage damage.

Pat Tatum
Terre Haute, Indiana 47803

Temperature fell to -25°F, but hollies were completely under snow during the coldest part of winter.

Ilex cornuta 'Rotunda' shows some damage to late growth, but otherwise is in excellent condition. *I. cornuta* 'Burfordii', which was completely under snow, is also in excellent condition; and this is true of *I. cornuta* 'Carissa'.

Ilex cornuta x pernyi 'Audrey', a rooted cutting, was completely covered by snow and is in excellent condition.

Ilex glabra, a plant about three feet tall, is exposed to full sun; leaves are reddish brown, but few seem to be burned badly.

Ilex crenata 'Hetzi', completely covered by snow, is in excellent condition.

Hybrid 'Lydia Morris', also was covered completely by snow and is in excellent condition.

Michael A. Dirr, Associate Professor of Horticulture
University of Illinois at Urbana-Champaign

The lowest temperature recorded by our water survey was -21°F. However, the months of January and February 1977 were intolerable for other reasons. Wind-chill factors ranged from -60°F to -70°F. The strong winds, which our region experienced, has a marked desiccating effect. Limited rainfall the previous summer (1976) and almost no rainfall through the winter compounded plant survival problems.

In late May, I taught a ten-day field-trip course, titled "The Gardens of Northeastern United States." We toured many plant collections, and some of my comments are derived from observations of hollies growing in those places.

Ilex crenata 'Border Gem', Girard introduction; partial snow-cover, came through in good condition; and 'Convexa', pronounced foliage injury, some stem die-back in Champaign.

'Highlander', observed at Bernheim Arboretum in Clermont, Ky. where the low was -18°F; excellent foliage color. 'Kingsville Dwarf', at Bernheim, also had excellent foliage color.

'Green Lustre' at Kingwood Center, Mansfield, Ohio, was severely injured after -20°F.

'Microphylla' was killed at Champaign, -21°F.

'Helleri' at Bernheim was in good condition.

'Rotundifolia' at Bernheim was completely defoliated but wood was alive. 'Stokes' looked well and 'Noble Upright' was in excellent condition.

Ilex cornuta at Bernheim was killed to the ground after -18°F; *I. cornuta* 'Burfordii' likewise.

Ilex glabra at Champaign - suffered some foliage injury (minimal) but presently looks excellent. *I. glabra* 'Compacta' the same.

Ilex opaca at Bernheim, Champaign, Dawes Arboretum (Newark, Ohio, -22°F) showed tremendous injury at all places listed. I did not make cultivar evaluations, but there were differences in severity of damage. In general, the injury was severe with old leaves completely killed. Wood, in most cases, was alive and new leaves were forming.

Ilex pedunculosa at Champaign is in good shape; leaves turned a slight brownish but have returned to normal color.

Ilex verticillata had no stem die-back and came through in fine shape. 'Cacapon' and 'Winter Red' are in excellent condition and fruiting heavily.

Ilex decidua showed no apparent damage in the Champaign area.

Ilex x attenuata 'Foster No.2' at Champaign--leaves were killed as was about one half of the wood.

Ilex x meserveae 'Blue Girl' and 'Blue Boy' at Champaign--leaves of both were severely injured; wood was not injured and new leaves are developing.

Ilex x 'Nellie R. Stevens' at Champaign and Bernheim was severely injured, both leaves and wood. *Ilex x* 'San Jose' at Champaign, was killed; and both *Ilex x* 'Albert Close' and *Ilex x* 'William Cowgill' were killed to snow-line at Champaign.

Robert Adams
Shelbyville, Indiana

Temperature fell to -18°F and -22°F. There were 72 hours of continuous subzero temperature with full sun and 20 to 30 miles per hour wind.

Ilex glabra leaves are blackened, and it will probably have to be cut back severely. Was exposed to sun; little damage to those growing in shade.

Ilex opaca suffered severe leaf-scorch on all cultivars exposed to sunlight.

Even hardy cultivars such as 'Clarissa', a Grace Hybrid from

Orlando Pride, is severely damaged and will lose 20 to 50% of its foliage; however, the wood appears to be still healthy. The cultivars raised are Grace Hybrids, 'Jersey Knight', and 'Farage'.

Ilex aquifolium 'Balkan', 'Winter King', and 'Winter Queen', x *altaclarensis* 'James G. Esson', and x *aquipernyi* are grown in shade and the damage was no worse than on opacas except for 'Winter King'. This suggests that sunlight in winter is the chief causative factor of winter injury.

Ilex cornuta 'Microphylla' in full sun appears to have been killed to or killed close to the ground.

Ilex crenata 'Green Lustre' is scorched and will lose 10 to 30% of its leaves, but the plant looks better than other cultivars of *I. crenata*.

Oddly enough, *Buxus sempervirens* ('Inglis', 'Morristown', and 'Welleri') came through quite well, even in exposed locations.

**Mrs. Martin A. Smith
Marshfield, Massachusetts**

I have two reports on hollies and the long, hard winter of 1976-1977. One is about my own hollies, all of which are *Ilex opaca* and showed no damage at all; they are from one-year-old seedlings to mature trees. However, we are one quarter of a mile from the ocean and the temperature rarely (and did not this past winter) falls below 0°F. We have very little snow and ice but a lot of wind.

The second report is more interesting. In (about) 1958, my father-in-law planted some hollies in Granville, Massachusetts. The town is in Zone 4 and in the snow-belt of Massachusetts and southern New Hampshire. The temperature is often below 0°F. I can find the names of only three American hollies, *I. opaca* 'Manig', 'Old Heavy Berry', and 'Sallie'; and *I. pedunculosa* and an *I. aquifolium* (no record of the named variety of the latter).

All the trees are about seven feet tall and are in a southern exposure with little protection from the wind. All survived the severe winter with no apparent damage and have a good set of berries for this winter.

The lowest temperature recorded was -22°F, and there were late heavy snowstorms and heavy ice. I know of no other hollies in this section of Massachusetts, and I have never found a chance seedling from a berry.

**James Playsted Wood
Springfield, Massachusetts**

Sometime back you asked for a report of winter damage, and I did not reply then as I was unsure. I am an amateur with a few dozen hollies, three to 20 feet tall, around the house.

A Foster hybrid was completely denuded and I thought dead, but it has grown new leaves to within four feet of the top. Hybrid 'Nellie R. Stevens' was also completely defoliated but has come back fully. I lost five tightly trimmed balls of *I. crenata* 'Convexa' and 'Oconee River', the original of which I brought from Athens, Georgia. A handsome *I. cornuta* was badly damaged and its top killed back about three feet. I lost the top of a favorite *I. aquifolium* 'Smithiana'. Others were more or less severely injured. My opacas, four of them from 15 to 20 feet high, came through unscathed.

A puzzle is that my small English boxwood, a dozen or so, the largest of which is about a foot and a half high and which usually suffer, came through the winter nicely. The hollies and the box are all mulched deeply in pine needles, simply because I have them by the ton. I do not advise them, however. A year or two ago, I lost 100 or so year-old cuttings in a coldframe through

using pine needles. Field mice rested in them and spent the winter living on the cuttings. They ate roots and all.

**The Dawes Arboretum
Newark, Ohio
Reported by Oliver D. Diller, Ph.D.**

	Dead	Moderate Damage
<i>I. x</i>	'John T. Morris'	<i>I. opaca</i> 'Halycon'
<i>x</i>	'San Jose'	'Cumberland'
<i>I. cornuta</i>	'Bat Wing'	'Eleanor'
<i>I. crenata</i>	'Rotundifolia'	'Old Heavy Berry'
	'Glass'	'Christmas Carol'
	'Compact'	'Dr. S. Edwin Muller'
<i>I. opaca</i>	'Hedgeholly'	'Big Mack'
	'Emily'	'Morgan Gold'
	'Amy'	'Bountiful'
		'Yule'
		'Goldie'
		'Clarissa'
<i>I. opaca</i>	Severe Damage	'Elizabeth'
	'Warrior'	'Klein No. 1'
	'Draper'	'Farage'
	'St. Mary'	'Kildare'
	'Chief Paduke'	'Brilliance'
	'Clark'	'Cheerful'
	'Betsy'	'Joanne'
	'Sherman'	'Mamie Eisenhower'
	'Merry Christmas'	'Johnson'
	'Big Red'	'Old Science'
	'Mae'	'Big Leaf'
	'Jersey Knight'	'Chesapeake'
		'Cave Hill No. 1'
	Dead	'Miss White'
	'Delia Bradley'	'Stokes'
	'Cardinal Hedge'	'Green Luster'
	'Rake Pond'	
	'George E. Hart'	
	'McDonald'	
	'Secrest'	
	'Canary'	No Injury
<i>I. aquifolium</i> (unknown cultivar)		<i>I. opaca</i> 'Makepeace'
<i>Ilex x meserveae</i> 'Blue Angel'		'Wyetta'
'Blue Prince'		'Cardinal'
<i>I. crenata</i> 'Prostrata'		'Judge Brown'
'Morris Dwarf'		'Fire Chief'
'Highlander'		'Bittersweet'
		'Millville'
		'Frank Thomas'
		'Angelica'
		'Wilfred'
		<i>I. decidua</i>
		<i>I. glabra</i> f. <i>leucocarpa</i>
		<i>I. glabra</i> 'Ivory Queen'
		<i>I. verticillata</i> 'Aurantiaca'

**John Ford
Wooster, Ohio**

-20°F recorded at my home and winds of 25 to 35 mph with gusts to 50 mph.

<i>I. opaca</i> Grace Hybrid	slight burn	Set 1971
<i>I. opaca</i> Grace Hybrid	moderate burn	Set 1970

Foundation Plantings, north side of house

<i>I. x attenuata</i>	leaves and last year's growth dead.	Set 1972
'Foster No. 2'	N.W. corner of building	
<i>I. crenata</i> 'Helleri'	covered with snow, scattered	Set 1973
	dead leaves.	
<i>I. crenata</i> 'Black Beauty'	leaves and last year's growth above	Set 1973
	snow dead.	
<i>I. crenata</i> 'Convexa'	all dead above snow-cover	Set 1968
<i>I. crenata</i> 'Black Beauty'	no damage, covered by snow.	Set 1973
<i>I. crenata</i> 'Ivory Queen'	twigs dead above snow-cover.	Set 1972
<i>I. crenata</i> 'Black Beauty'	twigs above snow dead.	Set 1973

Scattered Plantings

<i>I. opaca</i> 'Canary'	severely burned, 90% defoliated. Last year's growth dead.	Set 1975
<i>I. opaca</i> 'Merry Christmas'	NW corner of house. No snow-cover, badly burned, 10% of tips dead to 4"	Set 1968
<i>I. opaca</i> 'Kentucky Smooth Leaf'	twigs and leaves dead above snow-cover.	Set 1970

Foundation Plantings, south side of house

<i>I. glabra</i> 'Compacta'	SE corner bldg. Severe burn; some twig-kill of last year's growth.	Set 1972
<i>I. crenata</i> 'Stokes'	covered by snow; a few scattered leaves dead	Set 1973
<i>I. crenata</i> 'Sentinel'	twigs above snow dead.	Set 1972
<i>I. crenata</i> 'Helleri'	covered by snow, no damage.	Set 1971
<i>I. crenata</i> 'Helleri'	covered by snow, slight damage one twig	Set 1971
<i>I. crenata</i> 'Helleri'	covered by snow, one twig dead.	Set 1971
<i>I. crenata</i> 'Stokes'	covered by snow, few scattered leaves dead	Set 1973
<i>I. crenata</i> 'Stokes'	covered by snow, few scattered leaves dead	Set 1973
<i>I. crenata</i> 'Miss Muffet'	covered by snow, 15% twigs dead.	Set 1972
<i>I. crenata</i> 'Black Beauty'	twigs above snow-cover dead.	Set 1972
<i>I. crenata</i> 'Convexa'	twigs above snow-cover dead	Set 1968

Scattered Plantings

<i>I. crenata</i> 'Black Beauty'	dead above snow-cover.	Set 1972
<i>I. opaca</i> 'Carnival'	moderately burned	Set 1970
<i>I. opaca</i> 'Manig'	severe burn - 30% defoliated, some tip-kill to 1"	Set 1968
<i>I. opaca</i> 'Christmas Carol'	severe burn, 50% defoliated, some tip-kill to 1"	Set 1968
<i>I. opaca</i> 70-27	badly burned, 10% defoliated.	Set 1972
<i>I. opaca</i> 70-26	severely burned, 10% defoliated	Set 1972
<i>I. opaca</i> 'Santa Claus'	severely burned, 10% defoliated, some tip-kill to 1"	Set 1973
<i>I. opaca</i> unnamed	severely burned, 20% defoliated, some tip-kill to 1"	Set 1973
<i>I. opaca</i> 'Cape Cod Dwarf'	no protection, badly burned, some tip-kill to 3"	Set 1970
<i>I. serrata</i>	no protection, some tip-kill to 4"	Set 1972
<i>I. serrata</i> x <i>verticillata</i> 'Harvest Red'	no protection, some tip-kill to 2"	Set 1972
<i>I. crenata</i> 'Hetzi'	very exposed, all dead above snow	Set 1972
<i>I. decidua</i> 'Warren's Red'	last year's growth dead	Set 1971
<i>I. glabra</i>	last year's growth dead, leaves dead.	Set 1972

John Ford, Curator
Seacrest Arboretum
Wooster, Ohio

Reports -20°F. A few days after this cold, there was very little damage shown on the leaves of most hollies, especially American hollies. Two weeks later, we had a three-day blizzard with continuous winds from 25-35 miles per hour and gusts up to 50 miles per hour.

The day after the blizzard stopped, a great deal of browning and blackening of holly leaves showed up. To complicate matters, we were seven inches deficient in rainfall for 1976, and the ground was very dry all over the Arboretum in the fall. Watering all day only soaked the ground a couple of inches.

We have many southern pines which are completely brown. Loblolly, for instance, is apparently dead as high as I can reach breaking twigs.

Damage seems to be progressively worse as more damage shows up as time goes on. Some hollies had green buds the first of March and now have dead tips six inches long. Many of the hybrids which we had from the National Arboretum are dead, especially 'Nellie R. Stevens' and 'Nellie R. Stevens' crosses.

Site seems to be a very important factor. Where hollies were exposed to winds from all sides with no protection, they suffered severe burn, whereas some of the same cultivars, which had some protection, had only moderate burn.

Extensive reports as of March, 1977, follow:

East Holding Nursery - March 17, 1977

Protected site with trees on all sides and scattered trees in nursery. Plants in place since 1968, unless noted otherwise. Branches and foliage below snow-cover green, unless noted otherwise. Plants crowded. Twigs and buds green, unless otherwise noted.

Row 3.	12 <i>I. aquifolium</i>	Pride selection--all branches above snow cover dead. Tops dead. Base main stem still green.	50"-90" h	In place since 1970
Row 4.	<i>I. opaca</i> 'Jersey Knight'		88" h	
	<i>I. crenata</i> 'Miss Muffet'	light burn above snow	24" h x 40" spread	In place since 1971
Row 12.	<i>I. opaca</i> 'Pride Hedge'	top dead, bad burn	52" h	
	<i>I. opaca</i> 'Pride Hedge'	top dead, bad burn	60" h	
	<i>I. opaca</i> 'Pride Hedge'	bad burn	88" h	
	<i>I. opaca</i> 'Pride Hedge'	bad burn	82" h	
	<i>I. opaca</i> 'Gertrude'	moderate burn	62" h	
	<i>I. opaca</i> 'Pride Dwarf'	moderate burn	59" h	
	<i>I. opaca</i> 'Pride Dwarf'	moderate burn	64" h	
	<i>I. opaca</i> 'Pride Dwarf'	defoliated, top dead	78" h	
	<i>I. opaca</i> 'Mrs. Robb'	90% defoliated	71" h	
	<i>I. opaca</i> 'Mrs. Robb'	90% defoliated	59" h	
	<i>I. opaca</i> 'Pride Berry'	90% defoliated	55" h	
	<i>I. opaca</i> 'Pride Berry'	under snow no damage	12" h	
	<i>I. opaca</i> 'Pride Berry'	light burn	31" h	
	<i>I. opaca</i> 'Mary Gable'	moderate burn	48" h	
	<i>I. opaca</i> 'Mary Gable'	90% defoliated	54" h	
	<i>I. opaca</i> 'Mary Gable'	moderate burn	42" h	
Row 13.	<i>I. opaca</i> 'Mrs. F.J. Close'	moderate burn	24" h	
	<i>I. opaca</i> 'Mrs. F.J. Close'	moderate burn	55" h	
	<i>I. opaca</i> 'Mrs. F.J. Close'	light burn	34" h	
	<i>I. opaca</i> 'Sleigh Bells'	light burn	55" h	
	<i>I. opaca</i> 'Sleigh Bells'	light burn	43" h	
	<i>I. opaca</i> 'Sleigh Bells'	moderate burn	50" h	
	<i>I. opaca</i> 'Red Flush'	moderate burn	37" h	
	<i>I. opaca</i> 'Red Flush'	moderate burn	82" h	
	<i>I. opaca</i> 'Red Flush'	below snow no damage	8" h	
	<i>I. opaca</i> 'Carnival'			

	<i>I. opaca</i>	twigs dead, main stem green	30''h	
	'Tanager'			
	'Nellie R. Stevens' x <i>integra</i>	no damage under snow	9''h	
Row 14.	<i>I. opaca</i>	moderate damage	96''h	
	'Margaret Pride'			
	<i>I. opaca</i>	moderate damage	95''h	
	'Margaret Pride'			
	<i>I. opaca</i>	bad damage	65''h	
	'Clarissa'			
	<i>I. opaca</i>	moderate damage	60''h	
	'Ling No. 2'			
	<i>I. opaca</i>	moderate damage	61''h	
	'Ling No. 2'			
	<i>I. opaca</i>	light damage	40''h	
	'Jersey Knight'			
	<i>I. opaca</i>	light damage	64''h	
	'Jersey Knight'			
	<i>I. opaca</i>	no damage	63''h	
	'Jersey Knight'			
	<i>I. opaca</i>	no damage	53''h	
Row 16.	<i>I. x</i> 'Nellie R. Stevens'	dead above snow-cover	82''h	
	<i>I. x</i> 'Accent'	dead above snow-cover	36''h	

Rhododendron Garden - March 15, 1977

Unless otherwise noted, holly on protected, drained sits; twigs and buds green.

	<i>I. opaca</i>	severe burn, exposed to wind tunnel	72''h	Set 1972
	'Betty Pride'			
	<i>I. opaca</i>	severe burn, exposed to wind tunnel	18''h	Set 1972
	'Fair Lady'			
	<i>I. opaca</i>	moderate burn, exposed to wind tunnel	84''h	Set 1975
	'Arlene Leach'			
	<i>I. opaca</i>	severe burn, exposed to wind tunnel	120''h	Set 1972
	'Red Spice'			
	<i>I. opaca</i>	moderate burn	144''h	Set 1971
	'Hedgeholly'			
	<i>I. opaca</i>	severe burn	204''h	Set 1971
	'Santa Claus'			
	<i>I. opaca</i>	severe burn	120''h	Set 1967
	'Cumberland'			
	<i>I. opaca</i> 'Canary'	moderate burn	168''h	Set 1967
	<i>I. opaca</i> 'Canary'	severe burn	120''h	Set 1967
	<i>I. opaca</i>	moderate burn	120''h-192''h	Set 1967
	<i>I. x meserveae</i>	tips above snow dead	36''h	Set 1974
	'Blue Girl'			
	<i>I. x meserveae</i>	tips above snow dead	18''h	Set 1974
	'Blue Prince'			
	<i>I. opaca</i>	severe burn	84''h	Set 1967
	'Mary Holman'			
	<i>I. verticillata</i>	no apparent damage; on wet site	60''h-200''h	Set 1930 and 1969

In Arboretum - various locations

	<i>I. opaca</i>	slight burn	32''h	Set 1922
	'Secrest'			
	<i>I. opaca</i> male	heavy burn where exposed to wind	30''h	Set 1922
	<i>I. crenata</i>	moderate burn above snow-cover	36''h	Set 1968
	yellow-fruited			
2	<i>I. glabra</i>	all leaves above snow killed; 2''-4'' of tips dead	120''h	Set 1933

Auditorium - exposed to prevailing winds

	<i>I. opaca</i>	moderate burn	60''h	Set 1971
	'Carnival'			
	<i>I. opaca</i>	moderate burn	72''h	Set 1971
	'Mary Holman'			
	<i>I. opaca</i>	moderate burn	60''h	Set 1971
	'Red Flush'			
	<i>I. opaca</i>	moderate burn	72''h	Set 1971
	'Camelot'			

	<i>I. opaca</i> (NE corner Auditorium)	severe burn; 60% defoliated	20''h	Set 1968
	<i>I. opaca</i> (east side Auditorium)	badly burned	18''h	Set 1968
	<i>I. opaca</i> (east side Auditorium)	moderate burn	10''h	Set 1968
	Holly Hedge			
	34 <i>I. opaca</i>	light to moderate burn	20''h	Set 1930
	Williams Hall - foundation planting north side of bldg.			
	2 <i>I. opaca</i> 'Old Heavy Berry'	slight bronzing	14''h	Set 1958
	Gourley Hall - foundation planting north side of bldg.			
	2 <i>I. opaca</i>	slight bronzing	18''h	Set 1950
	Williams Hall - protected on 3 sides by bldg., open to east			
	<i>I. opaca</i> 'Sunset Glow'	no damage	10''h	Set 1969
	Arboretum Woods - protected, well-drained site			
	3 <i>I. opaca</i>	slightly burned	28'-30''h	Set 1922

West Holding Nursery - March 17, 1977

Protected site with trees on all sides. Plants in place since 1969, unless otherwise noted. Branches and foliage below snow-cover green, unless otherwise noted. Plants crowded. Site somewhat wet, although tile drainage has been installed. In general, plants somewhat leggy. Branches and buds still green, unless otherwise noted.

Row 1.	<i>I. crenata</i>	twigs dead above snow-cover	95''h	Set 1970
	'Glass'			
	<i>I. crenata</i>	twigs dead above snow-cover	102''h	Set 1970
	'Glass'			
	<i>I. crenata</i>	no damage, covered by snow	10''h x 24'' sp.	
	'Red Lion'			
	<i>I. crenata</i>	no damage, covered by snow	10''h x 20'' sp.	
	'Red Lion'			
Row 2.	<i>I. opaca</i>	bad burn	38''h	Set 1971
	'St. Mary'			
	<i>I. glabra</i>	dead above snow-cover prostrate	14''h x 58'' long	Set 1972
	<i>I. opaca</i>	20% defoliated	28''h	Set 1970
	'Old Science Bigleaf'			
Row 3.	<i>I. opaca</i>	moderate burn	67''h	Set 1970
	'Laura'			
	<i>I. opaca</i>	moderate burn	59''h	Set 1970
	'Laura'			
	<i>I. opaca</i>	moderate burn	67''h	
	'Marta'			
	<i>I. opaca</i>	moderate burn	70''h	
	'Marta'			
	<i>I. opaca</i>	moderate burn	68''h	
	'Marta'			
	<i>I. opaca</i>	moderate burn	60''h	
	'Marta'			
	<i>I. opaca</i>	moderate burn	72''h	Set 1970
	'Wilfred'			
	<i>I. opaca</i>	moderate burn	72''h	Set 1970
	'Wilfred'			
	<i>I. opaca</i>	dead	82''h	Set 1970
	'George E. Hart'			
	<i>I. opaca</i>	branches dead, stem green	84''h	Set 1970
	'George E. Hart'			
	<i>I. opaca</i>	bad burn	68''h	Set 1970
	'Bountiful'			
	<i>I. opaca</i>	bad burn	48''h	Set 1970
	'Brown No. 7'			
	<i>I. opaca</i>	completely defoliated, top dead	54''h	Set 1970
	'Judy'			
Row 4.	<i>I. opaca</i>	moderate burn, slight twig-kill	66''h	Set 1970
	'Eleanor'			
	<i>I. opaca</i>	moderate burn	65''h	Set 1970
	'Chesapeake'			

	<i>I. glabra</i>	all leaves above snow-cover dead, slight twig-kill	34''h	Set 1972		<i>I. x 'Foster No.2'</i>	dead above snow cover	74''h	Set 1971
	<i>I. opaca</i> 'Judy'	severe burn	59''h	Set 1970		<i>I. x 'Foster No.2'</i>	dead above snow-cover	49''h	Set 1971
	<i>I. glabra</i> sel.	killed above snow-cover	46''h	Set 1974		<i>I. x 'Foster No.2'</i>	twigs dead above snow- cover, stem green	78''h	Set 1971
	<i>I. decidua</i>	no damage	80''h	Set 1974	Row 9.	<i>I. opaca</i>	severe burn	40''h	Set 1971
	<i>I. opaca</i>	light burn	54''h	Set 1971		'Cave Hill No.1'			
	'Jersey Knight'					<i>I. opaca</i>	bad burn	54''h	Set 1971
	<i>I. opaca</i>	bad burn	48''h	Set 1971		'Cave Hill No.1'			
	'St. Mary'					<i>I. opaca</i>	bad burn	49''h	Set 1970
	<i>I. opaca</i>	bad burn	38''h	Set 1971		'Cave Hill No.1'			
	'Wyetta'					<i>I. glabra</i>	twigs dead above snow-cover	30''h	Set 1970
	<i>I. opaca</i>	bad burn	49''h	Set 1970		<i>I. opaca</i>	below snow-cover no damage	18''h	Set 1970
	'Bountiful'					'Cardinal'			
	<i>I. opaca</i>	moderate burn	68''h	Set 1971		<i>I. opaca</i>	bad burn	23''h	Set 1970
	'Chesapeake'					'Cardinal'			
	<i>I. opaca</i>	bad burn	92''h	Set 1970		<i>I. opaca</i>	bad burn	49''h	Set 1970
Row 5.	'Dr. S. Edwin Muller'					'Cave Hill No.1'			
	<i>I. opaca</i>	no burn	54''h	Set 1971		<i>I. x 'William Cowgill'</i>	tips above snow-cover dead	14''h	
	'Wyetta'					<i>I. x 'William Cowgill'</i>	tips above snow-cover dead	13''h	
	<i>I. opaca</i>	light burn	60''h	Set 1971		<i>I. x 'Harry Gunning'</i>	tips above snow-cover dead	20''h	
	<i>I. opaca</i>	moderate burn	75''h	Set 1971		<i>I. crenata</i>	dead above snow-cover	13''h	
	'Cheerful'					'Microphylla'			
	<i>I. opaca</i>	moderate burn	64''h	Set 1971		<i>I. opaca</i>	moderate burn	20''h	
	'Cheerful'					'Dorothy'			
	<i>I. opaca</i>	moderate burn	42''h			<i>I. glabra</i>	tips above snow-cover dead	21''h	Set 1974
	'Dorothy'					'Ivory Queen'			
	<i>I. opaca</i>	light burn	34''h	Set 1971		<i>I. x 'Foster No.2'</i>	twigs above snow-cover dead, branches green	60''h	Set 1971
Row 5.	<i>I. decidua</i>	no damage	68''h	Set 1974					
	<i>I. opaca</i>	light burn	25''h	Set 1971	Row 10.	<i>I. opaca</i>	moderate burn	100''h	
	'Cardinal'					'Merry Christmas'			
	<i>I. opaca</i>	moderate burn	48''h	Set 1971		<i>I. opaca</i>	no damage, covered with snow	20''h	
	'Cardinal'					'Manig'			
	<i>I. opaca</i>	no burn	44''h	Set 1971		<i>I. opaca</i>	bad burn	78''h	
	'Cardinal Hedge'					'Morgan Gold'			
	<i>I. opaca</i>	no damage	26''h	Set 1971		<i>I. opaca</i>	bad burn	58''h	
	'Halcyon'					'Cape Cod Dwarf'			
	<i>I. opaca</i>					<i>I. opaca</i>	bad burn	56''h	
	'Jersey Knight'					'Cape Cod Dwarf'			
Row 6.	<i>I. glabra</i>	tips dead above snow-cover	21''h	Set 1974		<i>I. opaca</i>	bad burn	66''h	
	<i>I. opaca</i>	severe burn	44''h	Set 1971		'Cape Cod Dwarf'			
	'Klein No.1'					<i>I. opaca</i>	severe burn	47''h	
	<i>I. opaca</i>	severe burn	38''h	Set 1971		'Cape Cod Dwarf'			
	'Klein No.1'					<i>I. opaca</i>	bad burn	15''h	
	<i>I. opaca</i>					'Cumberland'			
	'Bountiful'					<i>I. opaca</i>	moderate burn	33''h	
	<i>I. opaca</i>	severe burn	50''h	Set 1971		'Kildare'			
	'Klein No.1'					<i>I. opaca</i>	severe burn	30''h	
	<i>I. opaca</i>	severe burn	30''h	Set 1971		'Kildare'			
	'Klein No.1'					<i>I. opaca</i>	severe burn	24''h	
	<i>I. opaca</i>	severe burn	75''h	Set 1971		'Mrs. F.J. Close'			
	'Klein No.1'					<i>I. opaca</i>	severe burn	44''h	
	<i>I. opaca</i>	moderate burn	40''h	Set 1971		'Valentine'			
	'Big Mack'					<i>I. opaca</i>	moderate burn	61''h	
	<i>I. opaca</i>	bad burn	54''h	Set 1970		'Ling'			
Row 7.	'Dr. S. Edwin Muller'					<i>I. opaca</i>	light burn	28''h	
	<i>I. glabra</i>	tips dead above snow-cover	30''h	Set 1974		'Carnival'			
	<i>I. opaca</i>	bad burn	54''h	Set 1971		<i>I. opaca</i>	moderate burn	40''h	
	'Secrest'					'Betty Pride'			
	<i>I. opaca</i>	bad burn	41''h	Set 1971		<i>I. opaca</i>	light burn	31''h	
	'Cave Hill No.2'					'Carnival'			
	<i>I. opaca</i>	bad burn	40''h	Set 1971	Row 11.	<i>I. glabra</i>	dead above snow	24''h	Set 1973
	'Cave Hill No.2'					<i>I. opaca</i>	light burn	97''h	
	<i>I. opaca</i>	moderate burn	48''h	Set 1970		Grace Hybrid			
Row 8.	'Marta'					<i>I. opaca</i>	moderate burn	12''h	
	<i>I. opaca</i>	moderate burn	34''h	Set 1971		'Marta'			
	'Big Mack'					<i>I. opaca</i>	badly burned	11''h	
	<i>I. opaca</i>	light burn	23''h	Set 1971		'Maxwell Point'			
	'Amy'					<i>I. opaca</i>	badly burned	19''h	
	<i>I. opaca</i>	severe burn	39''h	Set 1971		'Cave Hill'			
	'Klein No.1'								
	<i>I. x 'Foster No.2'</i>	dead	70''h	Set 1971					

	<i>I. opaca</i>	badly burned	21''h		<i>I. opaca</i>	light burn	54''h	Set 1970
	'Webber'				'Red Flush'			
	<i>I. opaca</i>	light burn	29''h		Holly Test Garden - March 29, 1977			
	'Webber'				Site fairly well protected; well-drained in most areas, except where deciduous hollies have been planted. Unless otherwise noted, no damage under snow-cover. Twigs green unless noted.			
	<i>I. opaca</i>	light burn	29''h		<i>I. opaca</i>	'Cape Cod'	moderate burn	9' - 10'' Set 5/16/69
	'Klein No.1'				<i>I. opaca</i>	'Christmas Bouquet'	light burn	12' - 0'' Set 5/16/69
	<i>I. opaca</i>	badly burned	16''h		<i>I. opaca</i>	'Needlepoint'	light burn	12' - 6'' Set 5/16/69
	'Marta'				<i>I. opaca</i>	'Elephant Berry'	severe burn	10' - 6'' Set 5/16/69
	<i>I. opaca</i>	badly burned	30''h		<i>I. opaca</i>	'Elephant Berry'	badly burned, 70% defoliated, some tip-kill	10' - 0'' Set 5/16/69
	'Marta'				<i>I. verticillata</i>		no apparent damage	7' - 11'' Set 9/18/70
	<i>I. opaca</i>	badly burned	9''h		<i>I. verticillata</i>		tips of twigs dead	6' - 1'' Set 9/17/70
	'Big Mack'				<i>I. verticillata</i>		no apparent damage	6' - 9'' Set 9/17/70
	<i>I. opaca</i>	badly burned	25''h		<i>I. opaca</i>	'Wyetta'	moderate burn	11' - 6'' Set 4/25/69
	'Judy Evans'				<i>I. opaca</i>	'Cumberland'	lightly burned	10' - 6'' Set 6/18/69
	<i>I. opaca</i>	badly burned	20''h		<i>I. opaca</i>	'Angelica'	lightly burned	12' - 6'' Set 6/18/69
	'Maxwell Point'				<i>I. opaca</i>	'Mary Holman'	slightly burned	9' - 4'' Set 6/18/69
	<i>I. opaca</i>	light burn	23''h		<i>I. opaca</i>	'Arlene Leach'	slightly burned	5' - 4'' Set 6/18/69
	'Webber'				<i>I. opaca</i>	'Betty Pride'	slightly burned	5' - 4'' Set 6/18/69
	<i>I. opaca</i>	light burn	54''h	Set 1970	<i>I. verticillata</i>		no apparent damage	8' - 3'' Set July 69
Row 12.	<i>I. crenata</i>	dead	50''h	Set 1970	<i>I. opaca</i>	'Goldie'	badly burned	6' - 6'' Set 6/18/69
	'Highlander'				<i>I. opaca</i>	'Draper'	moderately burned	11' - 6'' Set 6/18/69
	<i>I. glabra</i>	twigs dead above snow	20''h	Set 1974	<i>I. opaca</i>	'Betsy'	moderately burned	8' - 6'' Set 6/18/69
Row 13.	<i>I. glabra</i>	twigs dead above snow	34''h	Set 1974	<i>I. opaca</i>	'Kildare'	moderately burned	11' - 6'' Set 6/18/69
	<i>I. opaca</i>	moderate burn	50''h	Set 1970	<i>I. opaca</i>	'Carnival'	lightly burned	10' - 0'' Set 6/16/70
	'Beautiful Ohio'				<i>I. opaca</i>	'Dr. S. Edwin Muller'	badly burned	4' - 8'' Set 9/16/70
	<i>I. glabra</i>	twigs dead above snow	20''h	Set 1974	<i>I. opaca</i>	'Cheerful'	severely burned, 90% defoliated	4' - 7'' Set 9/16/70
	<i>I. opaca</i>	light burn	24''h	Set 1970	<i>I. verticillata</i> f.		no apparent damage	8' - 2'' Set 9/16/70
	'Pride of Butler'				<i>chrysoarpa</i>			
	<i>I. opaca</i>	light burn	21''h	Set 1970	<i>I. opaca</i>	'Morgan Gold'	moderately burned	5' - 1'' Set 6/18/69
	'Carnival'				<i>I. opaca</i>	'Makepeace'	moderately burned	12' - 6'' Set 6/18/69
	<i>I. opaca</i>	moderate burn	37''h	Set 1970	<i>I. opaca</i>	'Sherman'	moderately burned, tip of top dead	7' - 2'' Set 9/16/70
	'Carnival'				<i>I. opaca</i>	'Wilfred'	lightly burned	6' - 10'' Set 9/16/70
	<i>I. crenata</i>	under snow, no damage	10''h		<i>I. opaca</i>	'Millville'	moderately burned	3' - 7'' Set 9/16/70
Row 14.	<i>I. opaca</i>	light burn	29''h	Set 1970	<i>I. opaca</i>	'Illini'	badly burned	2' - 6'' Set 6/16/72
	'Christmas Bouquet'				<i>I. opaca</i>	'Beautiful Ohio'	twigs dead, 80% defoliated	6' - 4'' Set 9/16/70
	<i>I. opaca</i>	moderate burn	19''h	Set 1970	<i>I. opaca</i>	'Emily'	twigs dead, 90% defoliated	6' - 3'' Set 9/16/70
	'Camelot'				<i>I. opaca</i>	'Mias White'	moderately burned	6' - 3'' Set 6/16/72
	<i>I. opaca</i>	severe burn	64''h	Set 1970	<i>I. opaca</i>	'Mrs. Grace Dilatush'	severely burned, dead above snow-cover	4' - 9'' Set 6/16/72
	'Red Spice'				<i>I. opaca</i>	'Mrs. F. J. Close'	moderately burned	4' - 1'' Set 6/18/69
	<i>I. opaca</i>	no burn	60''h	Set 1970	<i>I. opaca</i>	'Valentine'	light burn	9' - 7'' Set 6/18/69
	'Red Flush'				<i>I. opaca</i>	'Mary Holman'	light burn	8' - 4'' Set 6/18/69
	<i>I. opaca</i>	severe burn	47''h	Set 1970	<i>I. opaca</i>	'George E. Hart'	last year's growth dead	6' - 9'' Set 6/8/71
	'Red Spice'				<i>I. opaca</i>	'Cave Hill No. 1'	light burn	7' - 10'' Set 9/16/70
	<i>I. opaca</i>	no burn	42''h	Set 1970	<i>I. opaca</i>	'Klein No.1'	moderately burned	8' - 0'' Set 9/16/70
	'Red Flush'				<i>I. opaca</i>	'Menantico'	moderately burned	5' - 1'' Set 6/16/72
	<i>I. glabra</i>	no burn, covered by snow	10''h	Set 1974	<i>I. opaca</i>	'Morgan Gold'	moderately burned	7' - 10'' Set 6/16/72
	<i>I. glabra</i>	tips above snow dead	24''h	Set 1974	<i>I. opaca</i>	'Ling'	light burn	8' - 4'' Set 6/19/69
	<i>I. glabra</i>	no damage, under snow	16''h	Set 1974	<i>I. opaca</i>	'Old Science Bigleaf'	moderately burned	6' - 2'' Set 6/8/71
	'Ivory Queen'				<i>I. opaca</i>	'Judy'	badly burned	6' - 9'' Set 6/8/71
	<i>I. opaca</i>	no damage	47''h	Set 1970	<i>I. opaca</i>	'Big Mack'	light burn	4' - 6'' Set 6/8/71
	'Red Flush'				<i>I. opaca</i>	'Secret'	moderately burned	5' - 3'' Set 6/8/71
	<i>I. opaca</i>	no burn	35''h	Set 1970	<i>I. opaca</i>	'Rake Pond'	badly burned	5' - 2'' Set 6/17/72
	'Red Flush'				<i>I. opaca</i>	'Cave Hill No. 2'	under snow-cover, no damage	1' - 10'' Set 6/8/71
	<i>I. opaca</i>	moderate burn	46''h	Set 1970	<i>I. crenata</i>	'Helleri'	dead above snow-cover	1' - 6'' Set 6/26/72
	'Beautiful Ohio'				<i>I. x</i>	'Gable No. 1'	top tip and tips to 6''	9' - 10'' Set 6/19/69
Row 15.	<i>I. opaca</i>	badly burned	58''h	Set 1970				
	'Beautiful Ohio'							
	<i>I. opaca</i>	severely burned	39''h	Set 1970				
	'Beautiful Ohio'							
	<i>I. opaca</i>	no burn	44''h	Set 1970				
	'Red Spice'							
	<i>I. opaca</i>	severely burned	32''h	Set 1970				
	'Beautiful Ohio'							
	<i>I. opaca</i>	badly burned	30''h	Set 1970				
	'Arlene Leach'							
	<i>I. opaca</i>	lightly burned	46''h	Set 1970				
	'Arlene Leach'							
	<i>I. opaca</i>	moderate burn	42''h	Set 1970				
	'Mary Holman'							
	<i>I. opaca</i>	moderate burn	34''h	Set 1970				
	'Arlene Leach'							
	<i>I. opaca</i>	moderate burn	49''h	Set 1970				
	'Red Flush'							

	dead; looks good otherwise			
<i>I. x meserveae</i> 'Blue Prince'	tips above snow-cover dead to 6"	3' - 3"	Set June 74	
<i>I. x meserveae</i> 'Blue Girl'	top 2' dead	5' - 5"	Set June 74	
<i>I. crenata</i> 'Hetzi'	tips above snow-cover dead	2' - 6"	Set 6/26/72	
<i>I. pernyi</i>	dead	3' - 10"	Set 6/19/69	
<i>I. glabra</i> 'Ivory Queen'	a few leaves show slight injury, good otherwise	5' - 0"	Set 6/26/72	
<i>I. pedunculosa</i>	no damage, excellent condition	7' - 8"	Set 6/8/71	
<i>I. x 'San Jose'</i>	tip of top dead, 10% defoliated from tips, fair condition otherwise	4' - 2"	Set 8/12/72	
<i>I. crenata</i> (yellow fruited)	tips of twigs defoliated, good condition otherwise	4' - 0"	Set 6/26/72	
<i>I. crenata</i> 'Miss Muffet'	10% of top above snow-cover dead, good condition otherwise	2' - 6"	Set May 71	
<i>I. x 'San Jose'</i>	40% defoliated on tips, good condition otherwise	10' - 3"	Set 6/19/69	
<i>I. x 'Foster No. 2'</i>	dead above snow-cover	4' - 3"	Set 9/17/70	
<i>I. glabra</i>	tips killed above snow-cover	3' - 0"	Set 8/12/72	
<i>I. pedunculosa</i>	good condition, no damage	4'-10"	Set June 74	
<i>I. x 'Lydia Morris'</i>	twigs dead above snow-cover	7' - 7"	Set 6/20/69	
<i>I. crenata</i> 'Sentinel'	badly burned, tips dead	7' - 0"	Set May 71	
<i>I. crenata</i> 'Glass'	80% defoliated, tips dead	10' - 4"	Set 9/17/70	
<i>I. crenata</i> 'Highlander'	tips dead above snow-cover	3' - 10"	Set 9/17/70	
<i>I. cornuta</i> 'Cartwright's Spiny'	dead above snow-cover	3' - 2"	Set 8/12/72	
<i>I. crenata</i> 'Microphylla'	dead above snow-cover	2' - 2"	Set 6/20/69	

Holly Display Garden - March 15, 1977

Branches and buds still green, unless otherwise noted. Exposed to winds on all sides but east. Portions below snow do not show so much damage. Plants have had sufficient room in which to develop. All have been kept mulched.

Bed B. Damage showed after windy weekend, winds 25 to 35 MPH with gusts to 50 MPH.

<i>I. opaca</i> 'Pride of Butler'	badly burned	36" h	Set 1972
<i>I. opaca</i> 'Pride of Butler'	badly burned	30" h	Set 1972
<i>I. opaca</i> 'Arthur Pride'	badly burned	72" h	Set 1972
<i>I. opaca</i> 'Pride of Butler'	badly burned	48" h	Set 1972
<i>I. opaca</i> 'Thanksgiving'	bronzed, top leaves gone	72" h	Set 1972
<i>I. opaca</i> 'Thanksgiving'	bronzed, 50% leaves gone	72" h	Set 1972
<i>I. opaca</i> 'Thanksgiving'	bronzed, 50% defoliated	72" h	Set 1972
<i>I. opaca</i> 'Arthur Pride'	badly burned	84" h	Set 1972
<i>I. opaca</i> 'Mary Holman'	moderate burn	60" h	Set 1972
<i>I. opaca</i> 'Mary Holman'	moderate burn, 20% defoliated	36" h	Set 1972
<i>I. opaca</i> 'Arlene Leach'	badly burned	60" h	Set 1972
<i>I. opaca</i> 'Mary Holman'	moderate burn	30" h	Set 1972
<i>I. opaca</i> 'Fair Lady'	33% defoliated	48" h	Set 1972
<i>I. opaca</i> 'Fair Lady'	50% defoliated	60" h	Set 1972
Bed A. <i>I. opaca</i> 'Ruth'	badly burned	72" h	Set 1972
<i>I. opaca</i> 'Ling Close'	badly burned, 60% defoliated	60" h	Set 1972
<i>I. opaca</i> 'Ling Close'	badly burned, 50% defoliated	60" h	Set 1972
<i>I. opaca</i> 'Albert Pride'	severely burned	60" h	Set 1972
<i>I. opaca</i> 'Ruth'	badly burned	84" h	Set 1972
<i>I. opaca</i> 'Ruth'	badly burned	60" h	Set 1972
<i>I. opaca</i> 'Clarissa'	badly burned, 50% defoliated	60" h	Set 1972
<i>I. opaca</i> 'Valentine'	moderate burn, top gone 1974 snow	36" h	Set 1972

<i>I. opaca</i> 'Valentine'	moderate burn	48" h	Set 1972
<i>I. opaca</i> 'Betty Pride'	badly burned	48" h	Set 1972
<i>I. opaca</i> 'Betty Pride'	badly burned, 75% defoliated	36" h	Set 1972
<i>I. opaca</i> 'Ling No.2'	badly burned, top broken out 1974 snow	36" h	Set 1972

Individual Plantings - Southcentral Area. Transplanted with tree spade fall 1975.

<i>I. opaca</i> 'Bountiful'	severe burn, 50% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Cape Cod'	severe burn, 90% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Christmas Carol'	severe burn, 90% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Mrs. Grace Dilatash'	severe burn, 90% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Alloway'	severe burn, 100% defoliated	96" h	Set 1975
<i>I. opaca</i> 'Bountiful'	severe burn, 90% defoliated	96" h	Set 1975
<i>I. opaca</i> 'Arden'	severe burn, 80% defoliated	96" h	Set 1975
<i>I. opaca</i> 'Yule'	severe burn, 80% defoliated; considerable twig-kill	96" h	Set 1975
<i>I. opaca</i> 'Torchbearer'	100% defoliated	60" h	Set 1975
<i>I. opaca</i> 'Merry Christmas'	badly burned, 50% defoliated	72" h	Set 1975
<i>I. opaca</i> 'Yule'	severely burned, 70% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Canary'	severely burned, 90% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Elfin'	severely burned, 80% defoliated	120" h	Set 1975
<i>I. opaca</i> 'Torchbearer'	heavily burned, 70% defoliated	120" h	Set 1975
<i>I. opaca</i> 'Perfection'	badly burned, 50% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Old Heavy Berry'	severely burned, 90% defoliated	72" h	Set 1975
Bed N. <i>I. opaca</i> 'Matriarch'	severely burned, 80% defoliated	84" h	Set 1975
<i>I. opaca</i> 'Christmas Carol'	badly burned, 50% defoliated	120" h	Set 1975
<i>I. opaca</i> 'Westcroft'	badly burned, 20% defoliated	120" h	Set 1975
<i>I. opaca</i> 'Cup Leaf'	severely burned, 90% defoliated	120" h	Set 1975
<i>I. opaca</i> 'Merry Christmas'	severely burned, 40% defoliated	96" h	Set 1975
<i>I. opaca</i> 'St. Mary'	bronzed	36" h	Set 1975
<i>I. opaca</i> 'Beautiful Ohio'	severe burn	36" h	Set 1975
<i>I. opaca</i> 'Cave Hill No. 1'	severe burn, 90% defoliated	72" h	Set 1975
<i>I. opaca</i> 'Santa Claus'	bronzed, 20% defoliated	48" h	Set 1975
<i>I. opaca</i> 'Secret'	bronzed, 50% defoliated	36" h	Set 1975
Bed D. <i>I. x meserveae</i> 'Blue Girl'	all tips above snow killed	24" h	Set 1974
<i>I. x meserveae</i> 'Blue Prince'	severe burn, all tips above snow killed	24" h	Set 1974
<u>Scattered Planting</u>			
<i>I. opaca</i> Grace Hybrid	badly burned	96" h	Set 1972
Bed H. <i>I. decidua</i>	last year's growth dead	72" h	Set 1973
<i>I. serrata</i>	6"-8" of tips winter-killed	96" h	Set 1973
<i>I. x 'Autumn Glow'</i>	no damage	30" h	Set 1973
<i>I. x 'Harvest Red'</i>	no damage	30" h	Set 1973
<i>I. verticillata</i>	no damage apparent	98" h	Set 1973
<i>I. verticillata</i> 'Aurantica'	no apparent damage	72" h	Set 1973
<i>I. verticillata</i> f. <i>chrysocarpa</i>	no apparent damage	96" h	Set 1973
<i>I. verticillata</i> 'Late Simpson'	no apparent damage	84" h	Set 1973

April 15, 1977

A good many of the hollies have turned more brown or have defoliated, since I sent the report in March. In most cases, the twigs and buds are still green. The hollies in the Holly Display Garden are mostly defoliated or the leaves have turned completely brown. They really look considerably more damaged than they did a month ago, when I first checked them for the report.

Ilex opaca 'Yule' has considerable twig kill. The Meserve hybrid hollies are all dead above the snow-cover. I doubt if any of the hollies in the Holly Display Garden will be fit to sell this spring, although I suspect they will recover.

Some of the American hollies on less severe sites are in much better condition. The American hollies on the north side of the Auditorium, where they were exposed to the prevailing winds, still have only moderate burn on the leaves. These are *Ilex opaca* 'Mary Holman', 'Red Flush', and 'Camelot'. They have not dropped their leaves the way the hollies did in the Holly Display Garden. The large American hollies on the east side of the Auditorium are almost completely defoliated.

In the Holly Test Garden, where there is some protection from wind, *Ilex glabra* 'Ivory Queen' and *Ilex pedunculosa* are in excellent condition. One should have no trouble selling either of these plants. American hollies, which have a moderate amount of burn but still look good from a distance, are 'Cumberland', 'Angelica', 'Carnival', 'Mary Holman', 'Arlene Leach', 'Betty Pride', 'Valentine', and 'Christmas Bouquet'.

In the Rhododendron Display Garden, *Ilex opaca* 'Santa Claus' has little damage to the leaves although, unfortunately, this particular holly is in a rather shady location and does look somewhat leggy. In our Holding Nursery where there is protection from the wind, 'Red Flush' and 'Jersey Knight' still look fairly good.

The Holly Display Garden is exposed to winds from every quarter. This certainly shows up in comparison to other areas where there is at least some wind protection. Any holly, which wasn't completely covered with snow and survived last winter, can certainly be considered hardy here at Wooster.

John E. Ford

Boyd H. Redner
Battle Creek, Michigan 49015

Reports -20°F and northern, southern, eastern, and western exposures, but mostly western. Almost all *Ilex opaca* and *I. crenata* leaves were badly burned.

John G. Hefner
Parkersburg, West Virginia

Reports -20°F and winds up to 35 miles per hour.

Two *Ilex cornuta* 'Rotunda' lost and several *I. cornuta* 'Burfordii'. About 50 are planted around the house and most are protected.

George R. Funkhouser, M.D.
Danville, Pennsylvania

Reports -10°F to -15°F.

Ilex opaca cultivars were affected by winter '76-77 as follows: 'Arden', and 'Cardinal Improved' dropped many leaves.

'Eleanore', 'Louise', 'Gretchen', 'Clarissa', and 'Pride of Butler' held their leaves in good color. 'Pride of Butler' crosses and 'Great Smokey' also held their leaves in good color.

Ilex opaca f. *xanthocarpa* dropped almost all its leaves.

David Leach
North Madison, Ohio

-15°F was the lowest temperature, but because of high winds, the chill factor was approximately -70°F.

All the Grace Hybrids (*Ilex opaca*) came through with flying colors. I have these planted in a variety of exposures, in sizes up to seven feet. The only injury I can detect is a slight foliage scorch on a 15-inch plant of 'Clarissa', which was recently planted in an unfavorable site. The best foliage color is the clone you (Orlando S. Pride) so kindly named for me. It's the same rich green that it was last fall, but all your hollies look fine. They are conspicuously the best of those I grow. Numerous hollies other than yours have suffered moderate to severe injury, even *Ilex glabra*.

Betty Campbell
Rt. 1, Hull, Illinois 62343

The lowest temperature was -15°F. Our place is near the Mississippi River and on flat land.

Two trees, of *Ilex aquifolium* 'Ciliata Major' in a southern exposure and a third in a northeastern exposure were badly burned on their top branches. One tree, protected by the house and with a southwestern exposure, has flowers on the lower branches as of this date. The other tree in a southwestern exposure is forming new leaves on the injured branches, where the old leaves dropped off or were removed. No flowers on the tree in the northeastern exposure; it shows no activity to date (mid-May).

Four American hollies were severely damaged. They are on the bank and exposed in all directions. I protected them with burlapped fencing from the northeast wind this year, but that was not enough protection. These four American hollies still show no activity.

Edward C. Wood
Crestwood, Missouri

Temperature low was -15°F.

I have Japanese, Chinese, English, American, *I. decidua*, and hybrid 'Nellie R. Stevens' hollies growing in (a close in) suburb of St. Louis.

All *I. opaca* berries (30 named varieties) froze during the winter and turned black. About 25% of the leaves were damaged. However, I did not lose a tree and all look excellent now.

Five *I. cornuta* 'Burfordii' were completely killed; one was 25 years old.

Most of the leaves on crenatas froze as well as twigs. It appears that all will recover from the main stems, but the shape of the plants will be poor for a couple of years.

All the English hollies were killed to the ground.

All the leaves dropped off x 'Nellie R. Stevens', but new leaves are coming.

I. decidua suffered no damage.

I. pedunculosa did not flower, had some damage, but is recovering.

I. x aquipernyi had some leaf damage, did not flower, but is recovering.

Hybrid 'Foster No.2' suffered heavy leaf damage, but has recovered very nicely. Hybrid 'Erma Byrd' suffered great damage; it is doubtful if it will recover. An *I. attenuata* male lost all leaves but is recovering nicely.

While all the American hollies now look well, the best-looking (both leaves and berries) throughout the winter was 'Mamie Eisenhower'. 'Canary' was a close second and 'Cumberland' third.

James W. Hageman
East Peoria, Illinois

This report is late but here, in hardiness Zone 5B, hollies do not start their growth until late April or early May. The overall report, which is being compiled, will interest me, because the southern part of the country had a winter similar to regular winters here in Woodford County. The data might, perhaps, be able to suggest cultivars of Chinese and English hollies which should be grown here.

I have written about the weather conditions in a separate paragraph at the end of my report, since they apply for all plants. Although the number of my plants are few, I hope my information will be useful.

All my American hollies were mulched with three to four inches of bark and wood chips. The mulch is not disturbed but left around the plants all year. The trees were not protected in any way with an antidesiccant spray or a burlap screen.

I. opaca, female, an unnamed cultivar from Emlong Nursery in Stevensville, Michigan, is located approximately 25 feet from the east side of the house; has almost a full day of sun exposure and no large trees or shrubs for a windbreak. This holly is six feet tall, and normal leaf-drop in spring is about 30 to 40% of the total. By March of this year, I estimated that 95% of its leaves had turned brown and dropped. The few leaves that did remain were near the top. Many small branches near the bottom are dead at the ends, but new buds are now emerging farther back on the branches. This was my most damaged plant.

I. opaca 'Arlene Leach', 3-1/2 feet tall, is located approximately 18 feet from the east side of the house with an exposure the same as that of the previous American holly. The only damage appears to be a scattering of brown leaves on the southwest side of the plant. No dead branches were observed.

I. opaca 'Pride of Butler' has the same location as 'Arlene Leach', is three feet tall, and suffered the least damage of all my hollies—just several burned or browned leaves on the southwest side.

I. opaca 'Jersey Knight' is located four feet from the south side of the garage, with full exposure to the sun and south and west winds. The damage to the four-foot tall plant was just a scattering of brown leaves. Growth on this holly is slightly ahead of the three females, and new growth is abundant over the entire plant.

I. decidua, which is located four feet from the south side of the garage, with full exposure to sun and wind, showed no damage. A male *I. decidua*, in the same location as the female plant, also showed no damage.

The lowest temperature recorded at the Greater Peoria Airport was -25°F on January 17. However, I think the winter temperature deserves more than just mention of the lowest temperature. The temperature was also -20°F on January 16; the highest temperature on that date was -9°F, which tied a record for the lowest temperature of the day. The average temperature for January was 8.5°F, a new low for the coldest month on record; the previous was 10.5°F in January 1918.

The winter '76-'77 had 29 days on which the minimum temperature was 0°F or lower. In contrast, the previous six winters had an average of only 8.8 days when the minimum was 0°F or lower. More important to the growing of hollies, we had 37 consecutive days when the temperature did not rise above freezing—December 28 - February 2. Taking into account the unusual weather condition, I think my hollies did quite well.

Samuel A. Reed
Glassboro, New Jersey

Here is a report of how my hollies fared during winter '76-'77.

Name of Holly	Condition Early March	Condition June 20, 1977
<i>I. aquifolium</i>		
'Beautyspra'	good, very little winter-burn	Excellent
'Angustifolia'	very good	Excellent
'Brownell Special'	moderate burn	Excellent, would never know there had been any damage
'Silvary'	severe damage	Defoliated, but completely recovered
<i>I. opaca</i>		
(Wheeler's Hazel)	moderate burn	Excellent
(Cape Cod Whitney)	moderate burn	Excellent
name unknown	very severe burn	Defoliated, but completely recovered
male		Complete recovery
name unknown	unprotected from wind, had severe burn, defoliated	Excellent
name unknown	protected from wind, very little burn	Excellent
'Herb Kale'	very little damage	Excellent
'Gardenia Leaf'	mild damage	Excellent
<i>I. cornuta</i>		
'Rotunda'	very severe burn	Defoliated, but completely recovered
'Burfordi'	very little damage	Excellent
<i>x aquipernyi</i>		
x 'Doctor Kassab'	no damage	Excellent
x 'Foster No. 2'	severe damage	Lost all flowers in late April freeze, otherwise excellent.
x 'Nellie R. Stevens'	no damage	Excellent
<i>I. latifolia x aquifolium</i>		
<i>I. latifolia x aquifolium</i>	no damage	Excellent except for rabbits
<i>I. crenata</i>		
'Helleri'	severe damage	Much dead wood had to be cut back severely. Life left at base. Excellent
others	no damage	Excellent
<i>I. opaca</i>		
'Wyetta'	condition good	Heavy fruit crop on all opacas
'Emily'	condition very good	
'Vera'	condition good	
'Farage'	condition good	
'Natale'	condition poor	
'St. Ann'	mild damage	
'Freeman'	mild damage	
'Double Zero'	condition good	
Several unnamed	condition good	

Milton H. Johnson
St. Louis, Missouri

The temperature fell to -14°F.

All my hollies were completely exposed, none really protected. All went into the cold weather, after the severe drought, well-watered by the sprinkler. *Ilex opaca* 'Manig', 'Farage', 'Merry Christmas', 'Old Heavy Berry', 'Arden', 'Hedgeholly', 'Cave Hill No.1', and 'Cheerful' are in excellent condition.

I. opaca 'Croonenburg' and *I. x altaclarensis* 'East Palatka' died. *I. opaca* 'Delia Bradley', 'Miss Helen', 'Johnson', 'Klein No. 1', 'Klein No.2', 'Emily', and 'Jersey Knight' are in excellent condition.

I. decidua in excellent condition.

I. x attenuata 'Foster No.1', and 'Foster No.2' are in excellent condition; also the hybrids 'Nellie R. Stevens' and 'Lydia Morris'. *I. x attenuata* 'Howard' is in fair condition.

I. aquifolium 'Teufel's Zero', 'Balkans', 'W.J. Bean' are in excellent condition; 'Ingram' was severely burned; and an unnamed *I. aquifolium* showed some burn.

I. (myrtifolia x opaca) 'Oriole' was severely burned.

I. cornuta, all were severely burned.

**Sidney Kincer
Kinmill Holly Orchard
Wytheville, Virginia**

Temperature fell to -14°F with several days of 0°F to -14°F. There were three weeks or more in which temperatures were no higher than 20°F in a 24-hour period.

Five to six inches of snow was on the ground at the beginning of the cold spell, but high winds caused it to drift to 12 inches high in spots, leaving bare much of the ground under the hollies. High winds lasted for 10 days or more, and the ground froze in some areas as deep as 30 inches. This is said to be the longest and roughest winter in Wytheville since 1917-18.

In evaluating the following, it might be noted that a late spring freeze killed all the berries on the opacas. This might have a bearing on the way they came through the winter with little or no damage. 12 'Cumberland', two to 15' tall, up to eight-foot spread; no visible damage to foliage or branch tips. 2 'Canary', 12' to 18' no damage. 3 'Lady Alice', 18' x 9', approximately 2% of leaves with some tip-burn on southwest side; otherwise condition excellent. 2 'Clarendon Spreading', 3-1/2' to 4' x 6', some black spotting of leaves, which is normal for cold weather; otherwise no damage. 1 'Manig', 12' x 8', 2% leaf-tip burn in southwest exposure. A few twigs show die-back two to three inches; no damage otherwise. 1 'Morgan Gold', 13' x 8', 60% leaf-tip damage on exposed southwest side; 20% damage on northeast side; no die-back of branch tips. 1 'Jersey Knight', 2' x 1-1/2', no damage, foliage good. 'Farage', 15' x 8' condition perfect, a real beauty. 2 'Eleanor', 12' x 6', no damage. 1 'Mamie Eisenhower', no damage. 2 'Arden', 12' x 8' and 15' x 10', some black spots on leaves which usually occur in -10°F; otherwise no damage. 1 'Silica King', 9' x 7', no damage. 1 *Ilex opaca*, unknown male, 15' x 10', no damage. 1 'Menantico', 8' x 4', no damage.

12 *Ilex decidua* seedlings, 1-1/2' to 8', no damage. 1 hybrid 'Foster No.2', 4-1/2 x 2', 100% leaf-kill; looks as though 1976 growth will die. 1 hybrid 'Foster No.2', 18" x 18", set out November 1976; 20% leaf-kill and some twigs dead. Had protection from snow-drift.

The following are *I. aquifolium*; 20 'Temough', 3' to 14'; 75% to 85% leaf damage; will probably defoliate 100%. No twig damage and no bark-split. Will leaf out O.K.; buds O.K. 1 'Winter Queen', 8' to 10'. Some burn on 75% of leaves. No visible bark-split. Flower buds are O.K. This tree was loaded with berries and extra fine foliage in December. 1 'Bicolor', 7-1/2' x 6'. 75% of the leaves have some damage, from slight to 75%. No bark damage visible. Flower buds are O.K. 1 'Princess Pat', 7' x 7', 25% to 50% of leaves burned on southwest exposure. Twigs and flower buds O.K. 1 'Green Maid', 7' x 10'. 10% leaf damage on northeast side; 60% leaf damage on southwest side. Flower buds O.K. No branch die-back except late growth at top. 2 'Winter King', 5' to 7' x 7'. Some damage to 25% of leaf-tips. Flower buds are O.K. No bark or twig damage. One tree is in a very protected spot; the other in full sun and wind exposure. 2 'Escort', 3' to 7' x 4' to 8'. 60% of leaves with some damage. No twig or back damage. Flower buds O.K.

1 Hybrid 'Nellie R. Stevens', 15' x 8'. 75% leaf damage on

southwest side and 40% on northeast. No branch damage. Flower buds O.K. No bark damage. (Some shade). 2 hybrid 'Nellie R. Stevens', 9' x 8', fully exposed to sun and wind. 60% damage to leaves. 20% to 30% tip die-back. Flower buds O.K.

1 *Ilex x aquipermyi* (male). 10% to 100% damage to 10% of leaves. No bark damage visible. Flower buds O.K.

1 *Ilex (integra x pernyi)* 'Elegance'. 3-1/2' x 1-1/2'; 50% leaves damaged; some slight die-back of 1976 growth. Flower buds O.K.

3 *Ilex cornuta* 'Burfordii'. 90% leaf-kill. 1976 growth will probably die. Flower buds on old growth seem to be O.K. All the Burfords in town look the same.

**Mrs. William Baumann
Gibraltar Holly Orchard
Cambridge, Maryland**

Temperature ranged from -12°F to 20°F for three weeks with sun and gale force winds.

We orchard some eight acres of *Ilex opaca*, *I. cornuta*, and hybrid 'Nellie R. Stevens' in field, planted on 20-foot centers and totally exposed; also one mile of *I. cornuta* in hedge form, exposed, and one-acre "nurse garden" for cuttings, protected on the north side. On the scale of 1 to 10, 10 being awarded varieties most severely burned, this is how we fared.

Field -- *Ilex opaca*

'Menantico'	1	
'Eleanor'	1	
'Maurice River'	1	
'Cumberland'	1	
'Lady Alice'	1	
'Canary'	1	
'Silica King'	1	
'Arden'	1	
'Croonenburg'	7	Why?

Ilex cornuta

'Rotunda'	9
'Hume'	9
'Berries Jubilee'	9
Some completely defoliated	
'Dazzler'	
x 'Nellie R. Stevens'	5

Hedge -

Ilex cornuta

'Rotunda'	9
'Hume'	9

"Nurse Garden"

Ilex aquifolium

'Fructu-lutea'	9
'Berigold'	9
(Agrentea-marginata variety)	9
x <i>altaclarensis</i> 'Wilsonii'	9

A Miserable Winter!

**Mrs. F. Morse Archer
Moorestown, New Jersey**

The lowest temperature was -6°F.

Most of our hollies are old, established trees (30 years or less). We live in a suburban area on approximately an acre lot. Some trees have grown together and shield each other. I have put a gross height after each tree, and the exposure just after that. I did not think it would be helpful to provide this report any sooner; I now feel that my observations are likely to hold.

Ilex cornuta, 18'; northern. Considerable leaf damage. Flowering but not too well. Will come through.

Ilex cornuta, 9'; northern. Flowering precisely as usual; some leaf damage.

Ilex cornuta 'Burfordii', 22'; northwestern. Flowering much less than normal.

Ilex (aquifolium x cornuta) 'Nellie R. Stevens', 10'; northwestern. Some browning of leaves but bouncing back.

Ilex opaca 'Jersey Princess', 1'; northern. Browning a little, but will be O.K.

Ilex opaca 'Old Heavy Berry', 25'; northern. No damage.

Ilex opaca 'Maurice River', 3'. No damage.

Ilex opaca f. *xanthocarpa*, 10'. No damage. Also 12-foot tree of same, no damage.

Ilex pedunculosa, 18'; northern. No damage, but dropped fruit soon after cold spell. Same species, 6'; also northern, no damage.

Ilex ciliospinosa (F), 15'; western. Came through fine.

Ilex pernyi var. *pernyi*, 14'; western. Had no trouble.

Ilex pernyi 'Veitchii', 15'; northwestern. Leaves O.K., but flower buds froze.

Ilex x 'Brilliant', 15' northern, more protected. Leaves O.K.

Ilex x *aquipernyi* 'Galbe', 15'; western. No trouble at all.

Ilex x *meserveae* 'Blue Girl', 3'; southern. No trouble.

Ilex aquifolium 'Van Tol', 20'; northwestern. Leaves turned white, some brown. Damaged at top. Now blooming well and new leaves appearing all over.

Ilex aquifolium 'Favorite' 6'; southeastern. Some whitening of leaves, but tree coming along well.

Ilex aquifolium 'Souder Special', 15'; northwestern. Much whitening of leaves, but now blooming and new leaves coming.

Ilex aquifolium 'Crispa', 8'; western. Much browning and dropping of leaves, but will make it.

Ilex x *altaclarensis* 'Camelliaefolia', 25'; northern. Minor damage, if any.

Ilex x *altaclarensis* 'Pyramidalis', 3'; western. Always a poor specimen, but not too much leaf damage.

Ilex crenata 'Helleri', 'Latifolia', and 'Convexa', no trouble.

An interspecific (Foster hybrid, female), 20', still looks very bad. Some green, but a great deal may be dead. Can't tell how it will come through. An interspecific (Foster hybrid, male) 18'; no damage to speak of.

The Don Smiths

Morris Plains, New Jersey

Report -8 to -10°F. The following hollies came through perfectly. Many were in various exposures with no protection. Hybrids 'San Jose', 'John T. Morris', 'Lydia Morris', Gable's 'Aquipern'; *I. pernyi*, male and female, *I. pedunculosa*, *I. ciliospinosa*, and *crenata*.

'Dwarf Burford', somewhat protected by spruce, came through beautifully.

Ilex sugerokii, northern exposure, in pot on top of ground under *I. pedunculosa* and forgotten, came through beautifully.

English holly, *I. aquifolium*, younger plants in open, suffered. An old, unnamed English holly for the first time burned on southwest.

Hybrid 'Nellie R. Stevens', completely burned but does not look dead.

An old plant of *I. aquifolium* 'Ciliata Major', with some protection from a large spruce, burned from the top to the bottom in a narrow streak where the south sun hit it. A first time for this.

Two plants of *I. x altaclarensis* 'Camelliaefolia' in open exposure burned badly. One, protected on the southwest by two other hollies, had only a few leaves burned which were exposed to southwest.

Harold Burr

Green Castle, Pennsylvania

Reports -10°F and much wind.

Ilex opaca 'Merry Christmas Improved', 'Needle Point', 'Maurice River', 'Old Heavy Leather Leaf', all came through well--so far.

Ilex opaca 'Merry Christmas', 'Cumberland', and f. *xanthocarpa*; also *I. cornuta* 'O. Spring' and *I. crenata* 'Convexa' suffered some wind-burn and sun-burn, but not too bad.

Hybrids 'Lydia Morris' and 'Nellie R. Stevens'; *I. aquifolium* 'Recurva' (sterile male) and 'Escort' were all badly brown, but twigs are still alive at this time.

Ilex cornuta in much the same condition.

Charles W. Lendon

Red Lion, Pennsylvania

Temperature dropped to -8°F.

Ilex opaca 'Canary', 10% burn; 'Cardinal', 40% burn; 'Manig', 30% burn; 'Farage', no damage.

Ilex cornuta, near house, north, no burn.

Ilex crenata 'Convexa', south, no effect.

Ilex cornuta 'Burfordii', no protection, 100% black.

Ilex aquifolium 'Firecracker', 'Scotia', 'Escort', 'Royal Red', 'Petite', 'Golden Milk Main', 'Silvary', 'Morell', 'Rederly', 'Green Maid', 'Special', all 90% burned. The wind gets them in every direction.

Ilex pedunculosa, open situation, 5% burn.

Ilex opaca 'Sprig', 'Perfection', 'Elizabeth', 'Homer', 'Johnson', 'Full-O-Berries', all burned only 5%.

Ilex crenata 'Red Lion', no protection, no burn.

Ilex x *meserveae* 'Blue Princess', 'Blue Prince', 'Blue Angel', no damage.

Mrs. Howard N. Boyer

Walkerville, Maryland

Reports -8°F on west side of a hill, which is wooded with 150-year-old oaks and exposed to winds up to 75 miles per hour.

I. x 'Nellie R. Stevens', leaves brown to within six inches of the ground.

I. x 'Lydia Morris', some brown but looks pretty good.

I. x 'San Jose', many leaves blown off, but tree looks fairly good.

I. x 'Foster No.2', burned back to six inches. Its survival is doubtful.

I. x attenuata 'Savannah', leaves brown; doubt it will survive.

I. pernyi, male, in good shape.

I. x meserveae 'Blue Girl' and 'Blue Boy' in excellent condition.

I. aquifolium 'Angustifolia' in poor condition.

I. cornuta 'Rotunda' in poor condition and 'Burfordii', burned back but in fair condition.

I. ciliospinosa protected by barn and in good shape.

I. opaca 'Big Red', 'Old Heavy Berry', 'Cardinal', 'Judge Brown', 'Merry Christmas', 'Bountiful', all with some burned leaves but otherwise in good condition. *I. opaca* 'Boyden' completely exposed and in excellent condition. 'Friends' good but not equal to 'Boyden'.

R. G. Berg

Groton, Connecticut

Reports -8°F and only moderate winds. Had about a foot of snow during the coldest spell. Plants are generally well-fed with Peter's "Rhododendron Special" (15-45-5) which greatly improves fruit set.

The cultivars of *Ilex opaca*, which were growing in the field, suffered no damage: 'Old Heavy Berry', 'Lady Alice', 'Miss Helen', 'Delia Bradley', an unidentified female, 'Mossy' (male), and an unidentified male.

Ilex aquifolium 'Teufel's Zero', in the open with light lath shade, has slight damage. Other cultivars of *I. aquifolium* are as follows:

'Winter Queen', in the open, no damage; 'Green Maid', with light lath shade, no damage; 'Brownell Special', with light lath shade, 10% damage; 'Reederly', in light to moderate shade, 10% damage; 'Winter King' (male), with light lath shade, no damage; 'Beacon' and 'Evangeline' in snow, O.K.; 'Royal Red', with moderate lath shade, no damage; 'Captain Royal' (male) with moderate shade, no damage.

Ilex cornuta (male) with moderate lath shade, no damage; and 'Burfordii' in the open, moderate lath shade, no damage.

Hybrids 'Nellie R. Stevens', in light lath shade, 50% damage; 'Edward J. Stevens', with moderate protection, no damage; and 'San Jose', with light lath shade, no damage.

Ilex x meserveae 'Blue Princess' and 'Blue Prince' in open exposure, no damage.

Ilex pedunculosa (male, from Brooklyn Botanic Garden) in light lath shade, no damage.

Ilex crenata 'Helleri' and 'Convexa' (most tender), open exposure, moderate damage.

In summarizing Mr. Berg's report, it should be mentioned he thinks that 'Nellie R. Stevens' has not lived up to his expectations on several counts: poor display of fruit, poor fruit color, and now poor winter appearance. His favorite plants are the opacas and 'San Jose', a hybrid (*Ilex aquifolium* x *pernyi*). *I. cornuta* 'Burfordii' appears to resent much sunlight, especially in summer; it is perfectly hardy in shade, but does not flower reliably.

Elliott E. Jensen
Hogsback Nursery
Silverton, Connecticut

-8°F was the lowest temperature, but many nights fell to 0°F and lower. This has been the worst winter I have experienced with holly damage. I think that the low temperatures before snow arrived are responsible. Many nights were 5°F or so. Then snow came, and there was a month of sustained low temperatures, not above freezing.

Plants below the snow-cover came through well. Those above the snow-cover show desiccation of the entire plant in some cases and only of branches in others. Only time will tell if some survive. My rhododendrons are also affected in this manner.

I had hoped to provide names of the hollies, but we had 25 inches of snow a couple of days ago, and I am unable to locate the tags. Things, in general, were badly split by heavy snow—the worst in 25 years.

Robert E. Zielazny
Holly Haven
Glen Cove, New York

We are located 200 feet from Long Island Sound and in Zone 7. The temperature was 0°F for many days. Strangely enough, the only hollies I lost were one *Ilex opaca* and two Foster's. All hollies were protected from the wind but with southern exposure.

There was some minor leaf damage to some trees of *Ilex aquifolium*, to *I. cornuta*, x 'Nellie R. Stevens' and, again strangely enough, to two trees of x 'San Jose' and variegated 'Pinto' and 'Silvary'. All were in different locations.

Most of my hollies suffered no damage, and these included aquifoliums and opacas, *pernyi*, *cornuta* 'Burfordii', x 'San Jose', and x 'Brilliant'. I do not know the cultivars of *I. opaca*, but the cultivars of *I. aquifolium* include 'Winter Queen', 'Brownell Special', 'Wieman's Globe', and *I. x altaclarensis* 'James G. Esson',

All my hollies were mulched with four to six inches of ground leaves, mostly oak and pine.

William E. Wortz
Southold, New York

The thermometer registered -6°F. Our house which is located on a bluff on Long Island Sound, has some protection from wind. We face west and do not provide any protection because of the size of our trees. We experienced winds of 30 to 40 miles per hour and much snow.

All the hollies came through well, with little wind-burn and at present look alright. One exception is our three-foot *I. aquifolium* 'Hastata', which suffered considerable wind-burn. Actually, the past two winters produced more wind-burn than this year; I would guess the lack of snow-cover was responsible.

Following are our hollies: *Ilex x altaclarensis* 'James G. Esson' and 'Wilsoni', 12 feet; *I. aquifolium* 'Ciliata Major', 15 feet, and 'Hastata', three feet; an unnamed *I. aquifolium* (female), 20 feet, and an unnamed *I. aquifolium* (male), 35 feet.

Raymond F. Wallick
York, Pennsylvania

We live on top of a hill above the west side of the Susquehanna River and are subjected to high winds. The temperature fell to -5°F.

All the leaves of x 'Nellie R. Stevens' look as though they were scalded.

Ilex x meserveae 'Blue Boy' and 'Blue Girl' came through in great shape.

American hollies, *I. opaca*: one with large leaves is in bad condition; two are in good condition. A number of small American hollies, two to three feet in size, have just about had it, especially those which I fed with "Holly Tone" last fall.

George Poudier
Lieb's Greenhouses, Inc.
New Rochelle, New York

The site of our place is the interior of Westchester County, high ground, but in a valley. The soil is well-drained, fertile loam on a 200-year-old farm grounds. Two feet of frost in the ground and six feet of snow-cover, too. The lowest reading on the thermometer was -5°F. For curiosity, I have been attempting to grow plants not usually successful this far north.

In the formal garden, extremely well-protected are: *Ilex sagerokii*; *I. cornuta* 'Burfordii', *I. opaca* f. *xanthocarpa*, collected; *I. aquifolium* 'J.C. Van Tol'; and *I. x meserveae* 'Blue Prince', 'Blue Princess', 'Blue Angel', and 'Blue Girl'. All survived with only foliage discoloration on 'J.C. Van Tol'. The Meserve hollies are in excellent condition.

In the hillside garden, which slopes south, has sandy deep soil, is protected by windbreaks, and where snow melts very quickly, are: *Ilex melanotricha*, *I. pedunculosa*, *I. cornuta* x *pernyi*, *I. cornuta* x *ciliospinosa*, and x 'Lydia Morris'. All look great; x 'Nellie R. Stevens' had its top burned.

Of interest: *Sarcococca hookeriana* is thriving.

In the north garden, protected on four sides from wind, but soil very dry because of a network of linden roots, the plants are

in individual pockets of peat, sand, 'Perlite', and soil and are given liquid feeding. There was one foot of snow. Here are *Ilex crenata* 'Helleri', 'Hetzi', 'Microphylla', 'Convexa', and *I. cornuta*; also x 'Nellie R. Stevens'. The entire planting is severely desiccated and defoliated, at least above the snow-line. It is surprising, because *I. crenata* 'Hetzi' is highly rated for hardiness.

J. E. Copping
Madison, Connecticut

Reports -5°F and frequent winds 30 to 50 miles per hour.

Seventy-five American hollies, fully exposed, survived but suffered severe wind-burn and 50% defoliation.

Hybrid 'Nellie R. Stevens', two to three feet tall, probably will not recover.

Ilex cornuta 'Burfordii', only a foot tall, was snow-covered and showed little damage. The Meserve hybrid 'Blue Boy' was protected by snow, the same as 'Burfordii', and had little damage.

D. V. Almond
East Harford, Connecticut

Temperature fell to -1°F; had snow-cover December 26, 1976, to late February 1977.

Ilex aquifolium, 4-1/2 feet, in maple shade and eastern exposure, seems O.K.

I. aquifolium 'Teufel's Zero', also in maple shade and southern exposure, seems O.K. This same cultivar, 'Teufel's Zero', five feet, transplanted in 1976, also in maple shade and southwestern exposure and with protection from sun, suffered severe branch-kill and there is question of survival.

Ilex opaca (local nursery source), all in maple shade. Plants, transplanted in 1974, are now about 2-1/2 feet. In southern exposure, they suffered moderate leaf-kill.

Howard Funk
Tuckahoe, New York

Consistently cold with strong, deadly winds from the west and northwest and light snow-cover. Temperature fell to -1°F.

Ilex crenata 'Helleri' on the east side of house, protected from northwest wind on terrace and in full sun, had little or no damage. *I. crenata* 'Mariesii' and 'Convexa' suffered no damage.

Ilex opaca (female, name unknown) on north side of yard, exposed to sun all day and to full blast of winter winds, had some dead leaves on last year's growth; may be due to damage by leaf miners.

Ilex cornuta, female. This tree, approximately 12 years old, was damaged in previous years and now appears to be dead. Some life maybe seen later, but probably not worth saving. A second *I. cornuta*, same age, on the north side of the garage, south side of the house, shows 10 to 15% damage of last year's growth. This tree will survive, though it may look like a "plucked chicken" for a year or two. Another winter as severe as this past one would probably finish this *cornuta*.

Ilex aquifolium (male), three trees about 30' high, along the east side of the lot and exposed to sun and wind, the northernmost one fully, the other two somewhat protected by the other trees. Leaves show some damage, but how extensive or severe it is difficult to say. The trees will survive; it is possible that by the end of the growing season, they will be fully recovered.

A male and female holly from The New York Botanical Garden as a "plant dividend" which, I am sure, are a variety of *I. aquifolium* because of their leaf structure, are in the same condition as immediately stated above.

George Avery, Director Emeritus
Brooklyn Botanic Garden
Brooklyn, New York

Temperature -5°F to 0°F. In southern exposure, no bad effects on the following hollies except die-back of late growth on some: 'Cumberland', 'Miss Helen', and other opacas; *Ilex pedunculosa*; *I. crenata* and several cultivars; also *I. aquifolium*, etc.

Robert H. Bomberger
Ardmore, Pennsylvania

Temperature fell to -5°F. *Ilex opaca*, gray condition on outside of leaves, inside of leaves green.

Sarah L. Loening
Southampton, Long Island

I am enclosing list of my hollies and have marked those which suffered this winter. Some of my hollies are protected from the north wind by my house. Others are protected from the south wind by a stone fence. Those in open space did best. *Ilex fargesii* is still wrapped up; it is a young plant which was put out last fall.

I. aquifolium 'Little Bull', leaves burned; 'Recurva', leaves badly burned; and 'Winter Queen', leaves burned.

Hybrids 'Aquiper', 'Nellie R. Stevens', and 'Malcolm S. Whipple', leaves burned.

I. rugosa and *I. fargesii*, burned.

Karl M. Levy
Baltimore, Maryland

Reports -5°F.

Ilex opaca, five in open exposure, the largest 5' x 15'; one 'Miss Helen', one a native, and the other three unknown varieties. All wintered well with only slight winter-burn.

Ilex aquifolium, in open exposure, suffered considerable leaf damage, especially where exposed to the sun; very little damage where planted on the north side and sheltered from east, west, and south.

Ilex cornuta, in open exposure and full sun, had considerable damage. *I. cornuta* planted on the north side of the house, having a northern and eastern exposure, wintered well with little leaf damage.

Ilex crenata (foundation planting) in southern and eastern exposure, wintered very well with no leaf damage.

x 'Nellie R. Stevens', in open exposure, had considerable leaf damage, especially where fully exposed to sun and west wind.

Generally, *I. crenata* suffered no damage; opacas, both seedlings and mature trees, wintered well; *I. aquifolium* and *I. cornuta*, slight damage; and *I. cornuta* 'Burfordii', the most damage.

D. F. Householder
Moorestown, New Jersey

The temperature in our area reached a low of -5°F last winter. During a six-week period, starting about Christmas, it was a rare day if the temperature went above 12°F.

In general, I believe most of my hollies weathered the winter quite well. The only ones I really lost were two *Ilex cornuta* 'Rotundifolia' which, in a way, surprised me. I thought I would lose some of my English hollies, but I didn't lose any.

This report has been delayed in order for me to see how my hollies, which didn't look particularly well in the spring, would do as summer wore on.

Ilex opaca 'Farage' -- one 12-year-old plant in open exposure; no kill; berried somewhat less than last year; very minimal new growth.

'Belle' -- approximately eight years old, a cutting of Dilatush's 'Belle', no kill; growing extremely well.

'Wyetta' -- three plants, 15 to 20 years old. Two in northeast exposure had slight stem-kill; are now in excellent condition and more heavily berried than usual. One in western exposure and growing behind a stone wall may have root-kill. Just now (July 15) it is beginning to sprout but doesn't look well.

'Cumberland' -- 15 to 18 years old, in open exposure; slight stem-end kill; minimal growth this spring but very heavily berried.

'Queen Elizabeth' -- two trees, 12 to 15 years; exposure in wooded area under high shade. Both are doing well.

'Menantico' -- 12 to 15 years old. High shade exposure under large trees; some stem-kill (several limbs); now growing reasonably well.

'Canary' -- two trees, 12 to 15 years; one in southeast exposure and one in high shade from large trees. Both are doing very well, although growth not so vigorous as usual.

'Old Heavy Berry' -- 15 to 18 years, old, in southeast exposure, slight stem-kill; now growing well and has good crop of berries.

Male unknown -- 25 to 30 years old, in southeast exposure. No kill and more flowers than ever before.

Female unknown -- 25 to 30 years old, in southeast exposure; slight stem-kill. It is berrying heavily but not quite so much as in previous years.

Female unknown -- Eight-to 10-year-old seedling from large 25- to 30-year old tree in southeast exposure; almost spineless. Lost almost all leaves but is recovering fairly well.

Female unknown -- eight-to 10-year-old seedling from the same large 25- to 30-year-old tree in southeast exposure. It has more elongated leaves and heavier spines than parent (compared to one above). No kill and is growing very well.

Ilex opaca x *cassine* 'Foster No.2' -- five trees, 12 to 15 years old, one in southeast exposure, four in northwest exposure. Two in the northwest exposure almost died (completely browned, but are now sprouting from the bottom). The other three had some kill but are now growing well.

The following eight are English: (*Ilex aquifolium*) 'Ferox' -- 12 years old, in southeast exposure. Thought this was killed; now (June 15) it is starting to sprout at ends of stems. Just finished flowering. The plant looks fair.

'Ferox Argentea' -- two plants, 10 years old, one in southeast exposure, one in open exposure; some stem-kill, otherwise in excellent condition.

'Angustifolia' -- one main plant, 12 years old, in western exposure, no kill and in excellent condition. Two three-year-old plants, cuttings from the main plant, one in open exposure; no kill and in excellent condition.

'Argentea Marginata' -- main plant, 12 to 15 years old, in southeast exposure; no kill, some burn, now in excellent condition. One three-year-old plant from cutting of the main plant in open exposure; lost almost all its leaves, but looks well now and is still sprouting vigorously.

'Little Bull' -- 12 to 15 years old, in open exposure. Some stem-end kill, but now in excellent condition. Flowered very heavily this year.

'W.J. Bean' -- 10 to 12 years old, in same exposure as *I. opaca* 'Menantico'; and growing very well, no kill.

'Ciliata Major' -- eight to 10 years old, in southeast exposure; no kill and growing well.

Female unknown -- 15 to 20 years, in open exposure. This tree is not fully hardy even in milder winters and lost almost all its leaves. However, it is now growing vigorously and has a nice

crop of berries.

I. (aquifolium x cornuta) 'Nellie R. Stevens' -- 12 to 15 years old, in open exposure, no kill; less growth than usual but in excellent condition and very heavily berried. Two plants, five years old from cuttings, both in southeast exposure, are doing very well.

'Edward J. Stevens', same parentage as above, eight to 10 years old, in southeast exposure; no kill and in excellent condition.

I. x altaclarensis 'Camelliaefolia' -- 12 to 15 years old, in open exposure; some stem-end kill. Now growing vigorously and bearing more berries than ever before.

Ilex cornuta 'Rotundifolia' -- two plants 15 to 20 years old, in open exposure. Both plants died.

'Burfordii' -- two plants, 10 to 12 years old in southwest exposure, are growing better than ever this year (and they always grew well); very heavily berried.

I. cornuta male -- two plants, 10 to 12 years old; one in southeast exposure, one in open exposure with high tree protection. Both lost almost all their leaves. Severe stem-kill to the one in southeast exposure. Both are now growing well.

I. cornuta female -- 10 to 12 years old; located right next to male in southeast exposure. No kill; growing well, but bearing relatively few berries compared to previous years.

I. cornuta x *pernyi* 'Doctor Kassab' -- one main plant, 12 years old, in southeast exposure. Some stem-kill, all flower buds killed, but lush new growth. Two plants from cuttings of the above, one in open exposure, one in western exposure; three to four years old, too young for flower buds; no kill and in excellent condition.

Ilex crenata 'Convexa', variegated -- one main plant, 13 years old, in west exposure; no kill and in excellent condition. One cutting from this plant, three years old, in open exposure; no kill and in excellent condition.

'Convexa' -- 12 to 15 years old, in northwest exposure; no kill and growing well; and 'Green Island' -- 8 to 10 years old, in southwest exposure; no kill and growing well.

Ilex pernyi -- one main plant, 10 years old, in southeast exposure. No kill and in excellent condition. One cutting from this plant, three years old, in open exposure; no kill and in excellent condition.

Ilex x aquipernyi -- 10 to 12 years old, in southeast exposure, is probably growing better this year than ever before. However, it has borne no berries at all this year.

Ilex x meserveae 'Blue Girl' -- 12 to 15 years old, in open exposure; no kill, in excellent condition and heavily berried. 'Blue Angel', six to eight years old, in southwest exposure; no kill and growing well.

Vera D. Bruestle Drexel Hill, Pennsylvania

Reports -4°F.

Two *Ilex aquifolium* (from Oregon) facing north seem to have weathered the winter without difficulty.

One *I. aquifolium*, with a smaller, curlier leaf and grown from seed, also from Oregon, stands on the northeast corner. It is 15 years old. The leaves are a gray color; whether this is damage from the cold or reflection off the snow, I do not know.

One *I. cornuta* 'Burfordii', which is about 15 years old, faces east. It appears to be alright, although leaves are brownish where the outside growth was cut for Christmas decorations.

Wade G. Emmett, III Richmond, Virginia

I report 0°F to 5°F; lowest at Richmond 5°F. I am also re-

porting at Clyndon, Maryland, where the temperature dropped to 0°F.

At Richmond, I had set out about 150 holly cuttings in the fall and some of these were damaged, more specifically, dried up. The ground was dry and, with cold winds, the cuttings just couldn't take it. The hybrid Foster holly, planted in front of my house (northern exposure), completely dried up. This tree is about six feet tall. All the leaves are dry and fall off when touched.

In Clyndon, Maryland, at my folks' home, I planted about 15 years ago an *Ilex aquifolium* and an *I. cornuta*. Both trees were severely damaged; the leaves are dry and gray; they have a burned appearance. They look as though they are dead. They are planted on the north side of the house, with taller trees all around.

The lowest recorded temperature was 0°F for about a week, with strong winds.

Callaway Gardens

Randall Allen, Horticulturist

Fred C. Galle, Director of Horticulture and Vice President
Pine Mountain, Georgia

Our lowest recorded temperature was 0°F, with a three-day period in which the temperature did not rise above 29°F.

Our only severely damaged holly is *Ilex rotunda*, which was completely defoliated. We are waiting to see if the two plants will show any sign of life this spring. The plants are located under a high pine canopy with a northern exposure. Plants of *Ilex pedunculosa* in the same location showed only minor damage, and *I. latifolia* showed none at all. Our other Oriental hollies, as well as our American and English collections, seem to have made it through the winter without damage.

We do have some hollies, mainly Chinese hollies, showing discoloration in some of the more open and exposed areas. However, damage had been exceedingly light in spite of the very unusual weather.

Many of our plants may now tend to break dormancy very rapidly. We shall have crab-apples in bloom next week. If something doesn't happen, some of our Chinese hollies will also be in flower very soon. If we get a cold snap again, that will knock our fruit crop off next fall.

Mrs. Ralph Linfoot

Limestone, Tennessee

Here is a list of hollies growing in Green County, east Tennessee, at an elevation of about 1500 feet. I have planted all within the past five years.

The temperature fell to 0°F several times and was in the low "teens" for many days. Weather records were broken many times during January and February. This summer records have also been broken, but we have been fortunate to have had enough rainfall to sustain plants thoroughly during the severe heat.

Within this past month (July), my damaged hollies have died. They tried to come back from the roots, but three failed in their attempt and one made no effort at all. An 'East Palatka' is now making strong, healthy, new growth and will, I believe, live.

Those which were killed are *I. cornuta* 'Dwarf Burford' in a dry, windy, west exposure; *I. vomitoria* (dwarf variety) killed, but tried to sprout--they never had any winter-burn before and had grown beautifully; *I. crenata* 'Helleri'; and *I. opaca* 'East Palatka'. Its top was killed but new growth is strong and healthy. The plant was about five feet tall but not well-established.

The following plants suffered no damage.

	Planted
<i>I. crenata</i> 'John Nosal'	1975
<i>I. x</i> 'Lydia Morris'	1975
<i>I. x</i> 'Hollowell'	1975
<i>I. x attenuata</i> 'Savannah'	1975
<i>I. x</i> . 'Nellie R. Stevens'	1975
<i>I. x</i> 'Foster #2'	1976
<i>I. x meserveae</i> 'Blue Prince', 'Blue Princess', 'Blue Angel'	1976
<i>I. cornuta</i> 'dwarf Burford'	1975
<i>I. cornuta</i> 'Burfordii'	1974
<i>I. crenata</i> 'Helleri'	1974
(next to the one killed)	
<i>I. crenata</i> 'Hetzi'	1974
<i>I. crenata</i> 'Rotundifolia'	1974
<i>I. crenata</i> 'Compacta'	1974
<i>I. opaca</i> seedlings, two to 10 years old	1974

One variegated holly lost its leaves but is growing well. It was brought as a potted plant in 1975 and is about 12 inches high. It was slow in getting established but did survive the winter, for I watered it through the winter and it is on the east side of a *Cedrus deodara* which protects it.

The native *Ilex opaca* lives and does well in most of this area. I am glad to share my experiences with members of the Society and hope that the information may be of some value in establishing limits for holly varieties.

William M. Glose, II

Allentown, Pennsylvania

Report -4°F.

I have well over 100 American hollies which range from five to 32 years of age, and many younger ones. The male trees were burned, or shall I say winter-burned, very slightly.

The female trees, which have winter-burned, are mostly the trees that were pruned at Christmas time, some badly and some not so badly. 'Wyetta' suffered the heaviest damage.

Ilex crenata had very little damage.

Of my four cultivars of *I. aquifolium*, 'Rederly' was damaged the hardest.

The hardest hit of my hybrid holly collection was 'Nellie R. Stevens'. It was burned clean to the ground. 'San Jose' was eaten above snow-line by the rabbits. The Meserve hybrids 'Blue Boy' and 'Blue Girl' did very well.

I must say that all branches of hollies which were buried in our 20 inches of snow came out best of all. Most damage was found on those in southern and western exposures.

David Lansdale

Media, Pennsylvania

We have about 600 hollies growing on four or five acres and did experience some damage. We do not know how bad the damage is and will not know until the new leaves try to grow.

All our plants of *x* 'Nellie R. Stevens', about 20, have turned brown.

Half of our Foster hybrid hollies, about 40, have been affected to some extent, some of them quite severely. The few *Ilex cornuta* 'Burfordii', which we have, have turned brown. Oddly enough, most of the English hollies - we have about 50 - survived with tips here and there burning back.

Most of the American hollies in the orchard came through in good shape, except for random spots of burning throughout the orchard. Four 10-foot trees, with apparently weak root-systems, turned brown. I pulled them out. 'Miss Helen' had more brown-

February 1977

Extent of Winter Damage to Ilex -- Sussex County, Del.

ILEX	HSA	LOCATION	SIZE	RATING	REMARKS
<i>aquifolium</i>	4-64	lawn	8 - 10'	3 - 2B	
'Marijo'					
'J.C. Van Tol'		lawn	6 - 8'	3 - 2B	
<i>x aquipernyi</i> (male)		lawn	8 - 10'	3	
<i>crenata</i>					
'Compacta'		field row	3 1/2'	3	
'Convexa'		field row	10 - 12"	5	
'Dwarf Cone'*		field row	18"	3 - 2B	*Test plant of NHC
'Dwarf Pagoda'	9-72	2-year field bed	3 - 4"	5	2-inch deep pine bark mulch
'Firefly'		lawn	42"	2	(2066 Orig. sdg., spreading)
'Green Dragon'	10-72	2-year field bed	3 - 4"	5	2-inch deep pine bark mulch
'Green Lustre'		field row	18"	8 - 6F	7 years old
'Hetzi'		field row	30"	3	very minor damage
'Ivory Hall'	3-74	lawn	48"	3 - 2B	orig. sdg. plant
'Ivory Hall'	3-74	field row	24"	3 - 2B	
'Ivory Tower'	4-74	48" lawn	48"	3	orig. sdg. plant
'Miss Muffet'	4-70	field row	12 - 15"	8 - 8H	
'Miss Muffet'	4-70	wall of home	36"	5F - 6F	
'Sentinel'	3-63	field row	12" - 4"	-1	50 plants
'Sentinel'	3-63	lawn	8"	-1	tight-sheared spire
'Shiro Fukurin'		lawn	30"	3 - 6F	(variegated clone)
'Shiro Fukurin'		field row	24"	3 - 6F	(variegated clone)
'Mariesii'		2-year field bed	8"	3	2-inch deep pine bark mulch
'Mariesii'		field row	12"	4	
'Stokes'		lawn	5' wide	5 - 5F	under elm trees
Hybrids					
'San Jose' (Wildon)		lawn	8'	3 - 6F	six or more plants
'Doctor Kassab'	7-65	lawn	7'	3 -	did not bloom in '76
'Edward J. Stevens'	9-67	cemetery	6'	0 -	water-table est. 12'
'Foster #2'		field row	18"	7 - 8H	
'James Swan'		field row	3'	6 -	
'John T. Morris'		six-quart pot	12"	1 -	heavy mulch, shaded
'Nellie R. Stevens'	8-67	lawn	12'	3 - 2B	north & south sides
'Nellie R. Stevens'	8-67	cemetery	10'	3 - 6F	water-table 4'
'Nellie R. Stevens'	8-67	cemetery	10'	7 - 3C	water-table 12'
'Shin Nien'	2-74	field row	18"	2 -	
<i>opaca</i>					
'Chief Paduke'	2-63	six-quart pot (shade)	12"	8 -	pine needle mulch
'Croonenburg'		lawn	14'	3 -	tight-sheared
'Governor William Paca'	1-70	field row	5'	2 - 3C	poor root maker
'Jersey Knight'	8-65	ditch bank	4'	7 -	wind-swept; low PH
'Jersey Knight'	8-65	field row	3'	1 -	beautiful
'Nelson West'	7-64	six-quart pot	12'	4 -	plunged part-shade
<i>F. xantharcarpa</i>		lawn	4'	3 - 5E	
<i>sugerokii longipendunculosa</i>		field row 15'	15'	6 - 6F	very thick plant

*Not registered with HSA (test plants)

The Tankard Nurseries
Exmore, Virginia

Reports temperature to 0°F.

Ilex crenata cultivars; little damage in nursery fields, except top damage in one-year field. Some plants hurt in landscape plantings, which were probably weakened by summer drought. The hybrids 'Nellie R. Stevens', not hurt, except tops of one-year field plants; and 'Foster #2', younger plants damaged and some older plants in some locations. *Ilex glabra* 'Compacta', no damage. *Ilex cornuta* 'Burfordii', no damage. *Ilex aquifolium*, no damage. *Ilex x aquipernyi* 'Brilliant', no damage.

Dr. H. Herbert Parcher
Harboridge Holly Farm
Earleville, Maryland

This report has been delayed in order to observe the recuperative abilities of my hollies.

Location -- Cecil County, Chesapeake Bay area. The orchard is at the water's edge, exposed to north winds but protected by good growth of deciduous and evergreen trees.

The temperature was down to 2°F in '77. *Ilex aquifolium* 'J.C. Van Tol' and 'Fisher', no damage. *Ilex x altaclarensis* 'Wilsonii', damaged and leaves turned brown, 3% died. The rest are putting on new growth on trunk and base of branches. *I. x altaclarensis* 'Shepherdii', new growth at top and some branches killed. All are recuperating.

Ilex x aquipernyi, complete die-back, but new leaves are coming on trunk and branches. *Ilex opaca* 'Old Heavy Berry', practically no damage; 'Christmas Carol', completely browned, new growth coming on trunk and branch; 'Arden, 90% of the trees

not damaged. Ten trees out of several hundred were completely defoliated. (Those damaged may have been weakened by last year's drought).

Shelby H. Jarman
603 Tony Tank Lane
Salisbury, Maryland

Hollies, numbering some 75, are scattered over a 1-1/2-acre lot. The soil is very sandy, under high shade from mature oaks, with the northern side sloping rather abruptly to the shore of a lake.

During the coldest weather, there were winds with gusts of gale force producing chill factors of -20 and -25 degrees. It is estimated that of the 33 plants listed as severely damaged, probably 20 of them are dead and the others will put out enough new growth to justify containing them in the collection.

The following hollies had no damage:

Ilex glabra and 'Ivory Queen'
Ilex opaca indigena and cultivars
Ilex vomitoria
Ilex cornuta and 'Burfordii'
Ilex crenata and 'Helleri', 'Mariesii', and 'Stokes'
Ilex aquifolium and 'Ciliata', 'J.C. Tol', and 'Royal Red'
Ilex centrochinensis
Ilex ciliospinosa
Ilex pendunculosa
Ilex pernyi
Ilex x aquipernyi and 'Brilliant'
Ilex x altaclarensis 'Belgica', 'Camelliaefolia', and 'Wilsonii'
Ilex x pernyi 'Dr. Hu'
Ilex (cornuta x pernyi) 'Doctor Kassab'
Ilex (cornuta 'Burfordii' x pernyi) 'Lydia Morris'
Meserve hybrid 'Blue Girl'

The following hollies were only slightly damaged:

Ilex opaca
Ilex cornuta 'Spinyleaf' and 'Rotunda'.
Ilex crenata 'Compacta', 'Convexa', 'Glass', 'Hetzi', 'Longifolia', and 'Rotundifolia'
Ilex aquifolium 'Angustifolia', 'Crispa Aurea', 'Aurea-Picta', 'Ferox-Argentea', 'Ingrammii', and 'Sparkler'
Ilex bitoritensis, *I. integra*
Ilex hybrids: 'Blue Princess', 'James G. Esson', 'Nellie R. Stevens', 'San Jose', and 'Wilsonii'

The following hollies were severely damaged:

Ilex cassine and var. *myrtifolia*
Ilex glabra
Ilex opaca 'Canary' and f. *xanthocarpa*
Ilex vomitoria and *I. vomitoria* f. *pendula*
Ilex cornuta 'Clarissa' and 'Willowleaf'
Ilex crenata 'Green Dragon', 'Dwarf Pagoda', 'Glass', 'Green Cushion', 'Green Thumb', 'Howard', 'Miss Muffet', and 'Repandens'
Ilex aquifolium 'Pendula', 'Angustifolia', 'Aurea-Regina', and 'Golden Queen'
Ilex latifolia
Ilex mutchagara
Hybrids 'Aquiper', 'Foster #2', and 'Nellie R. Stevens'

James R. Hannon
Loeb, Rhodes & Co.
New York, N.Y.

Reports 2°F.

Ilex cornuta 'Rotunda', six years old, mature in size and shape; in my humble opinion, the plant will not survive. We live very close to its hardiness limit of Scarsdale, N.Y.

Bruce Martin
Sandy Springs,
Anderson Co., S.C.

Temperature went to 5°F in Piedmont Carolinas, 30 miles from Clemson University. *Ilex vomitoria* 'Nana', open ground and container plants, were burned badly. *Ilex cornuta* 'Burfordii', 'Dwarf Burford', 'Rotunda', and 'Carissa' all burned; some may not recover. *Ilex opaca*, no damage. *Ilex latifolia*, no damage -- all growing in ground in plantings.

Dan B. Wicker
Clark Road, Lake Lanier
Landrum, S.C.

New Tryon, North Carolina, on southern slope of the Blue Ridge Mountains at an elevation of 1,200 feet, the lowest temperature was 5°F. High winds were frequent and the chill factor of -10°F to -20°F was reported.

Type of damage included grayish or whitish cast to leaves and twigs, indicating desiccation rather than frost-kill. Such damage was preferentially on the southwesterly exposed portions of the hollies, a further indication of kill by desiccation. No observations were made of the blackening of the leaves, fruits, and twigs as typically found in true frost-kill in upstate New York, for example.

Exposure: The hollies are located on southerly to southwesterly slopes of hillside with little or no protection from wind or direct sunlight.

Serious damage: The only instance of sufficient damage to indicate little probability of survival of plants in the field were four *Ilex cornuta* sports, which had been transplanted just before the frigid weather began. Damage to plants in containers was extensive.

Moderate damage: plants in the field, *Ilex (cassine* var. *angustifolia* x *opaca*) Foster's hybrids; 'Willow Leaf', a selection of *I. crenata* 'Longifolia'; *Ilex vomitoria*, yaupon and weeping yaupon, and also some yaupon wildings.

Slight damage: *Ilex opaca* 'Pearle Le Clair', 'Delia Bradey', and 'Silica King'; *Ilex cornuta* 'Burfordii' and miscellaneous sports, probably originating from Burford.

No significant damage: *Ilex cornuta* 'Burfordii' x *pernyi* (mature field plants of Henry Homan's "C.B. Hybrids" 'Red Robe', 'Red Delight', and 'Good Taste'); *Ilex (aquifolium* x *cornuta*) 'Nellie R. Stevens' and 'Edward J. Stevens'; *Ilex cornuta* 'Giant Beauty' and *I. (cornuta* x *pernyi)* 'Doctor Kassab', *Ilex aquifolium* 'Fructulutea', 'Teufel's DeLuxe', 'Sally Hubbard', 'Berigold', 'W.J. Bean', 'Whitney #4', 'N.Y.B.G. #2', 'Teufel's Hybrid'; x *altaclarensis* 'Belgica', 'James G. Esson', 'Hodginsi', and 'Marnokii'; *Ilex opaca* 'Cumberland', 'Chief Paduke', 'Kingsville Special', and native seedlings. *Ilex (x altaclarensis* 'Wilsonii' x *sikkimensis*) 'San Jose'. To my inexpert eye, it looks like a hybrid of *I. aquifolium* x *altaclarensis* possibly and *I. ciliospinosa*. Leaves are rather matte green and berries very brilliant red and in quantity. Anyway, the person who supplied the young plants said they were 'San Jose'.

Thomas H. B. Boothe
Pottersville, New Jersey

I have been concerned about what the wind, extreme cold, and even snow might have done to my trees. However, at this time I am trying to exercise optimism that the trees which look bad will come back. On the northeastern side of my property, there is a brook with a five-foot bank (on my side) to prevent overflowing. This runs into Black River, which flows across the eastern end of my lot.

Starting in front of my house, which faces northwest, there is a 62-inch male English holly in the lawn center and very exposed

to the north. It is badly burned. Another, 57 inches tall, which also has maximum exposure, has brown and gray leaves on the sunny side.

Immediately in front of the house are two English hollies, 63 inches and 28 inches. These appear not to have been damaged in any way.

Two large Meserve hybrid 'Blue Girl', 60 inches and 75 inches, are planted at the house corners. I call them *rugosa*, but Mrs. Meserve says they are not. They and a 60-inch slim Meserve hybrid 'Blue Boy' nearby have not suffered even one sun-burned leaf. These were brought from Glen Ridge, New Jersey, when we moved here in 1969, as were the several English hollies mentioned above. New late growth on all my English hollies does freeze back each year -- only at the tops.

A 37-inch 'Ferox' and three smaller ones near the northern corner of the house, but much exposed, have some brown leaves. However, I expect they will continue to function as a hedge. They have purple trunks and stems and usually assume somewhat of a purple-bronze color from late fall on. They are slow growers and attractive.

Some of my small trees around 12 inches tall, set out from propagating frames, have burned leaves at the top but green below the snow-line. Several *I. x aquipernyi* and *I. rugosa*, in other parts of the property, seem not hit by the winter. Three very small *I. crenata* plants, grown from seeds, were not damaged. I have about 25 English seedlings in cans, sunk in the ground, which are still covered by about 10 inches of snow. These seeds came from Oregon trees. Some of my English hollies came from Mrs. Thacker's stock (New Jersey) as cuttings, which I have raised, and seem more "Oregon" than the high glossy *I. aquifolium*.

The lowest temperature that I observed here was -9°F. We had 0°F and a few degrees below several times.

Earl Dilatush warned me, as he has others in early articles, that English holly trees were generally not hardy. They might survive for years, until one bad winter-killed them to the ground. Despite this, I had many such trees in Glen Ridge and had no trouble.

My lone American holly is over 12 feet tall, a male, and faces south, with the brook bank and mulberry trees behind it. Not a single leaf is brown. This is not so brief a report as you requested, but, perhaps, you can extract information of value.

Mrs. James Kinnear
Birmingham, Alabama

We are located on top of a mountain with all exposures. The lowest temperature was 0°F. Some 30 odd members of the genus *Ilex* -- American, English, Oriental, and deciduous -- came through the winter without damage. I would have expected some damage on our few English hollies, 'Polkadot', 'Porcupine', 'Silvary', and 'Echo'; but there is none. I have delayed this report until I was sure no damage would show up.

We lost a 25-foot loquat, a large magnolia, a pittosporum, and a great deal of other plants.

Doris E. Davidson
Walpole, Massachusetts

Six plants of hybrid 'Blue Princess', 12 inches high, were set out last fall, and all seem fine. Two or three have a few brown leaves.

We were encased in ice and snow from Christmas until late February. Birds (cardinals, mocking birds, and robins) stripped off all berries above the snow-line. Our hollies were not covered

or staked in any way. We did very carefully shake off heavy snow before it froze. Our trees withstood the winter beautifully--very little damage to the branches. Some snapping of the ends--a two- or three-inch piece. No splitting.

Our hollies have been in place since we moved to Walpole nine years ago, and they seem to have adapted well. The soil is sandy. Three female trees are about eight feet high, and they receive "tender loving care." All our hollies have been purchased from Bancroft's of Plainview, Massachusetts.

R.P. Bissonnette
Evansville, Indiana

Regarding winter '76-'77 damage, the Chinese hollies particularly took a terrible beating here. Hybrid 'Nellie R. Stevens' was badly damaged and is only now (July 27) beginning to make a bit of recovery. 'Doctor Kassab' did not take the winter well. I had a good many pure English hollies which were damaged, but none was killed outright as were the Chinese hollies. The good news from the past winter is that wherever I had *I. rugosa* parentage, the plants in general did much better. Fortunately, we had a fair amount of snow-cover during the extremely cold weather in January and this, I think, saved many plants which might otherwise have suffered.

Donald Zaum
Wasco, Illinois

I waited to see the full effects of winter '76-'77, so my reporting to you has been delayed.

All my hollies lost most of their leaves, except for a few on the north side and under the little snow-cover we had. The difference between the Grace Hybrids and other *opacas*--is the former did not die-back at the tips. Most of the others died back three to five inches. Also, the Grace Hybrids responded with better growth, that is, full-sized leaves.

Most of the other hollies put out growth in back of the dead area, but their leaves are small and thin. I was afraid that they might dry up in July, but so far they are holding their own. If we have another severe winter, they will not make it.

Of the various *I. opaca* cultivars, the one that suffered most was 'Hedgeholly'. The south side of the tree is mostly dead, and the rest small-leaved. 'Old Heavy Berry' came through in fair condition, but with some tip-kill. However, the growth is nearly normal now.

One thing I've noticed--and it may be only a coincidence--is that those hollies which had the glossiest leaves were the least hardy. The ones which had the duller leaves came through in much better condition. I have a number with leaves as glossy as the leaves of some English hollies, and they winter-killed more than most.

One more note--two of the hollies I got from Orlando S. Pride are large; I have had them for many years. Their extensive root-system was covered with three inches of oak-leaf mulch which must have helped. However, the smaller ones he has sent to me at Christmas through the years, and which are about five feet, are in just as good condition.

J.C. McDaniel
University of Illinois at Urbana-Champaign

I. opaca plants have pretty well-recovered from last winter; many were defoliated above the snow-line.

The hardiest hybrids were *I. x meserveae* and *I. x aquipernyi* 'San Jose', but the latter lost its 1977 flower buds.

J. Bon Hartline
Anna, Illinois

American hollies: Very little damage except to 'East Palatka' and 'Hume'. Both were killed. In some places x 'Foster #2' was completely killed, but a hedge in town was not injured at all. In the nursery, x 'Foster #2' was damaged mildly.

Chinese hollies: Almost all the cultivars were killed to below the snow-line but are now recovering. Plants were killed where the snow was blown away.

Japanese hollies: No serious damage.

English hollies: Almost all were killed back to the snow-line or to the main stems. However, only a couple of cultivars failed to recover. I now have some very fine English holly ground-cover plants. Two or three came through the severe winter very well, but I am not sure of their names

Hybrids: 'Lydia Morris' and 'Joe McDaniel' and some of the USDA releasés did very well. The English type hybrids did not fare so well, but none was killed.

Other: Weeping yaupon killed to the ground, but is coming back. Dwarf yaupon suffered some top die-back, but is now looking well. Hybrid 'Nellie R. Stevens' had light damage, and the Meserve hybrids no damage. The yellow-berried American holly is O.K.

Gene K. Eisenbeiss
U.S. National Arboretum
Washington, D.C.

This report has been delayed, because much winter injury is still occurring. An earlier report would not have indicated the amount of injury. Die-back is still occurring and some plants, still thought to be alive, are not yet showing any new growth

Severely injured were many plants of *I. vomitoria*, especially the dwarf forms. Many plants of *I. vomitoria* were killed almost to the ground. *I. cassine* and its var. *angustifolia* and *myrtifolia* were completely defoliated and severely burned back. All *I. rotunda* were defoliated, and one unnamed clone was killed to the ground with its trunk split. *I. cornuta* selections were burned back and defoliated, especially several variegated forms including 'O Spring'. *I. cornuta* 'Rotunda' and 'Carissa' had severe injury but are coming back nicely.

For the first time in at least 30 years, noticeable injury occurred on *I. crenata* 'Convexa', 'Stokes', and 'Rotundifolia'; and 'Microphylla' showed considerable tip die-back. There was spotty but considerable shoot die-back on numerous branches as far back as two to three feet. *I. crenata* 'Mariesii', 'Green Dragon', 'Dwarf Pagoda', and 'Helleri' showed only occasional marginal leaf-scorch.

Injury on *I. aquifolium* was spotty. Some selections, especially variegated ones, such as 'Golden Milkmaid', 'Ingramii', and other internal variegated leaf types, were defoliated and had severe wood injury. All selections of *I. aquifolium* in full sun and wind-exposed sites had much leaf injury.

Interspecific hybrids, such as 'Lydia Morris', 'Doctor Kassab', 'Nellie R. Stevens', 'Maplehurst', 'Edward J. Stevens', 'Accent', 'Elegance', 'William Cowgill', 'Chieftain', 'Wirt L. Winn', 'San Jose', 'Jade', 'Ruby', 'Howard Dorsett', 'Harry Gunning', and 'Edward Goucher' came through extremely well. There was much injury among *I. x attenuata* hybrids, such as 'Fosters #1-5', 'Erma Byrd', 'East Palatka', 'Hume No. 1 and 2', 'Tanager', and 'Oriole'. With large plants of the same clone of *I. x attenuata*, such as 'Foster #2', one plant would have severe injury while the plant beside it showed no injury. This was inexplicable.

Injury to two clones of *I. colchica* was severe. I cannot say that other *I. colchica* material would not be hardy. We don't know much about the climatic range of this species. *I. chinensi* (six unnamed clones) overwintered well. All leaves dropped in December, but this is normal here. *I. ciliospinosa*, no named selections—some of our clones came through well; others were severely injured. *I. fargesii*, which overwintered well in sheltered places, was injured in exposed sites. *I. macrocarpa*, no sign of injury. *I. pedunculosa* overwintered well.

The maximum low temperature here was -1°F, which was not a record. The severity of the winter appeared to be the extended period of frozen soil, little precipitation, and prolonged periods of high wind. Continuous below freezing days totaled 111, which was unusual. Snow-cover was minimal with only one significant fall of six inches in early January.

Injury was equally severe in raised soil-beds in our lathhouses as in the open. This was probably because of frost penetration in the beds. The most severe injury occurred among container plants in an unheated, shaded plastic house; frost penetration with resulting root-kill was thought to be the major cause. In some cases, but not all, there was less injury where plants were sheltered from wind and sun. This was particularly noticeable on *I. cornuta* and *I. vomitoria*. The inconsistencies in injury are not understood.

Injury on *Magnolia gradiflora* and camellias was devastating in the Washington, D.C., area. Evergreen rhododendrons and azaleas showed much foliage injury and some bud-kill but are recovering well. Flowering this spring was better than expected. Severe kill was wide-spread on *Ligustrum lucidum* and *L. japonicum*. Unexplainable was the lack of injury to boxwood and some very tender broad-leaved evergreens, such as *Photinia*, *Rapheolepis*, and *Fatsia*.

Upon close examination of hollies, there was severe winter injury in 1976 transplants and to twigs and branches which had been previously bruised and broken.

The general feeling among my associates is that the major cause of the past season's winter injury was dehydration, aggravated by prolonged frozen soil and long periods of high wind.

Much could have been learned if critical measurements of the amount and speed of frost penetration had been taken. Further, the rate and amount of temperature drop in soil already frozen is a subject needing more study. The root-killing temperatures have been measured for many ornamental plants. However, more study should be undertaken, especially on variation within species. Figures are needed, for example, on how much cold is required to reduce the temperature from 25°F to 15°F at a depth of 12 inches in the soil. In other words, what is the rate of cold penetration, after soil has been frozen?

In spite of the unusual amount of holly injury this past winter, I saw no evidence that would cause me to do any serious re-rating of holly hardiness.

Edward J. Duda, Director
Bartlett Arboretum
Stamford, Connecticut

Here are observation made this year on winter damage to hollies:

Hybrid 'Nellie R. Steven' suffered loss of foliage, but no wood die-back. *Ilex pernyi* showed only some bronzing.

I. cornuta had six to eight inches of die-back on all terminals. *I. opaca*, cultivar unknown, minor leaf-drop. *I. aquifolium* 'Angustifolia', minor leaf-drop. *I. centrochinensis*, no damage. *I. aquifolium*, cultivar unknown, from Strafford, Conn., no damage. *I.*

aquifolium 'White Sail' had die-back on all terminals but fairly good foliar renewal.

Theodore R. Klein
Yew Dell Nurseries
Crestwood, Kentucky

The great majority of *Ilex opaca* cultivars came through with flying colors. In my own collection of 200 cultivars, all came through in excellent condition, with the exception of 15 or 20 clones which originated south of Kentucky. These were not killed but suffered severe defoliation and small twig damage. We had one casualty, and it was not entirely dead; a tree which originated in Georgia.

I checked the hollies in and around Louisville. In private plantings, in Cave Hill Cemetery, six trees were lost. In the Jewish Cemetery, six trees in a planting of about 100 were lost. In the St. Louis Cemetery (Louisville), the loss was rather heavy, about 30 trees out of about 100. These were old trees, 20 to 50 years old. When I say that these trees were lost, they had no foliage and were sprouting from the base.

Most all the other *Ilex* that I observed, such as *I. crenata*, *I. cornuta* x *aquipernyi*, and *I. aquifolium*, were killed to the snow-line. However, *I. x aquipernyi* is sprouting quite a bit along the trunk.

Magnolia grandiflora suffered greater damage than I can ever remember. However, I did see a few trees in Cave Hill Cemetery and in St. Louis Cemetery which were in excellent condition.

I conclude in saying that the clones of *Ilex opaca* which originated in Kentucky and northward had no winter damage at all.

Gerald Smith, Extension Horticulturist
University of Georgia, Athens

Several things surprised me; one was the amount of injury to dwarf yaupon holly. This holly suffered throughout the State much more than I have seen before. In the northern half of the State, this holly was injured to the ground also; however, most of the plants recovered.

I also noticed a great deal of injury to *I. cornuta* 'Rotunda' in containers in the southern part of the State. In general, Chinese and Japanese hollies suffered considerable root-injury in containers in Georgia nurseries. It is interesting to note that these plants suffered considerably more injury than container-grown azaleas nearby.

Some Burford hollies in the northern part of the State, in the ground, were injured. One really interesting observation was the relationship of berry production with cold injury of Burford holly. I noted plants with heavy berry production being killed almost to the ground, while plants of identical size in similar locations without berries received little, if any, injury. Also limbs of Burford holly, which had heavy berry production, were more severely injured than limbs which were more sparse in production.

Carl L. Whitcomb, Associate Professor of Horticulture
Oklahoma State University, Stillwater

Here in central Oklahoma, the winter of 1976-'77 bore few surprises in the way of cold hardiness information on hollies. Our coldest temperature during the winter was -4°F to -6°F. However, the duration of the cold was unusually long in that the ground was frozen six to eight inches deep for a period of eight to nine weeks. This appears to be the reason for some loss of fall-planted hollies. What I think happened was simply that the soil mass froze deep enough so that the root-system could not absorb

sufficient water and the top desiccated.

In Tulsa, Oklahoma City, Stillwater, and the central Oklahoma area, we grow a wide range of hollies, including most of the cultivars of *I. cornuta*, *I. opaca*, *I. vomitoria*, and *I. crenata*, with a moderate number of *I. aquifolium* and *I. aquifolium-cornuta* hybrids, such as 'Nellie R. Stevens' which does very well. Those plants which were established, that is, had been grown with reasonable care for one full year or more before winter '76-'77, received no damage unless they were in above-ground containers.

All hollies, regardless of species, which were not extremely well-protected or insulated in some manner and in an above-ground container, either in a nursery or in a landscape-type situation, were killed by the sustained cold period.

As I look back at the notes I made regarding this past winter on observations, experimental results, etc., these are the only comments I believe will be of benefit to your survey.

I expect many Holly Society members would be very very, much surprised if they knew how many species and cultivars and how well most of these hollies do in central and eastern Oklahoma. Some do reasonable well in parts of western Oklahoma in established urban areas with considerable tree canopy and protection, particularly from the drying winds.

Mrs. Julian W. Hill
Vineyard Haven, Massachusetts

Hollies at Barnard's Inn Farm did not suffer the extensive damage I have seen throughout the east coast of Virginia and as far west as St. Louis. I seem to have lost one small plant of *Ilex x altaclarensis* 'Eldridge' in my nursery. This is surprising, since my Wilmington, Del., 'Eldridge' survived and has flowered and set fruit. The one in my nursery had too little mulch for one thing. All the other species and clones look fine.

As far as cold is concerned, it was -4°F in some areas and -10°F at the coldest. Winds were excessively severe. There are broken branches, possibly because of the snow or the snow and wind together.

Ilex decidua has never been happy with me, but my plants are from Alabama seeds. I should have used a northern source.

I. cornuta 'Burfordii' is O.K. All the aquifoliums are O.K., also all hybrids, all opacas, crenatas, and rugosa. One large branch of *I. crenata* 'Helleri' is dead.

I. x altaclarensis 'Camelliaefolia', *I. aquifolium* 'Ciliata Major', 'NYBG #2', and 'Evangeline' are O.K.

The plants were spared January and February thaws and had more snow than usual. The cold was not too unusual for our Island.

Edward Mills, Jr.
Ashmet Holly Reservation
East Falmouth, Massachusetts

Ilex cornuta, a beautiful specimen, 10 feet tall, in a southern exposure and protected by a building on the north, had all its leaves turn brown and drop off.

I. opaca 'Mt. Vernon', a 10-foot tree; leaves turned brown and dropped. It was surrounded by other opacas which are in fine condition.

I. opaca 'St. Ann', two trees in northern exposure; their leaves browned and dropped off, while 'Emily', 'Elizabeth', and 'Ashmet' (male) in the same exposure came through in fine condition.

Matthew Duck
Schenectady, New York

The lowest temperature was -20°F, and there was not much snow-cover. It has been a hard winter in upstate New York on holly, but holly has made a marvelous recovery. There was little snow until mid-January, so we did not have that protection during the first part of winter.

Here is a list of the hollies which are now growing well.

Ilex opaca 'Perfection' in eastern exposure (16 winters); 'Old Heavy Berry', in northern exposure (five winters); 'Mary Holman' and 'Katherin' in southern exposure (two winters); and 'Menantico' in western exposure (two winters).

I. aquifolium 'Winter Queen' and 'Winter King' in eastern exposure (two winters).

I. crenata 'Rotundifolia' in eastern exposure (15 winters).

I. cornuta 'Rotunda' in northern exposure (two winters); *cornuta* 'Dwarf Burford', two plants, which have been through three winters and are now growing well.

I. pedunculosa and *pollinator* (one winter), both are growing well.

In upper New York State, heavy mulching is a "must".

I. opaca 'Perfection' and 'Farage' on the southern side of trees were wind-burned and shed most of their leaves. Now they have grown new leaves. I am really pleased with the way my trees are doing. This winter didn't break records for low temperature here, but it was steadily cold and more windy than usual.

Where there were small trees, some did not start growing until a month later.

Wilson V. Mott Huntington, New York

I delayed the report of winter '76-77 in order to have a better opportunity to observe its full effects on my hollies.

I am located on Long Island about 10 miles east of "Planting Fields" and 10 miles west of Mrs. Meserve; about the same distance from Long Island Sound as "Planting Fields" and on high ground. Most of my hollies are on a slight slope to the south and have protection from some other evergreens. I think the lowest temperature was 0°F.

I lost no hollies over the winter. Spring-rooted cuttings, planted outside without protection, came through. I'll not report on plants less than 15 inches, since the unusually long snow-cover from Christmas to approximately the end of February was a protection. All the damage was in the form of burned leaves. Where this was not severe, it is not evident after the new growth.

Ilex opaca. Of 18 fairly large trees, there was no significant damage on named cultivars or seedlings. However, there are several named cultivars with which I have not been successful through winters in the 60's.

I. aquifolium. Of seedling cultivars, the green-stemmed came through with little burn; the purple-stemmed showed more. This seems typical.

'Ciliata Major', one badly burned; two had some burn; and five no burn. 'Ciliata Minor', one badly burned; two had some burn; and two no burn (makes a scraggly form). 'Handsworth', two had some burn. 'Scotia', one bad burn, two some, and five no burn. (This cultivar has a tendency to show burn over half a leaf in severe winters). 'Firecracker', four bad burn and three some burn. (Not a good holly for this area). 'Teufel's Hybrid', one had some burn; 'Teufel's Yellow Berry', one some burn and two none; 'Teufel's Zero', one badly burned, two had some burn, and one no burn. (Not good here).

Cultivars of *I. aquifolium*, showing no significant burn, were 'Barbarosa', 'Christmas Red', 'Dumbarton Oaks', 'Ferox', 'Golden Queen', 'Milkmaid', 'Hollycroft Jill', 'Ingramii', 'J.C. Van Tol', 'Rederly', 'Royal Red', and 'Virginia Nosal'.

I. x altaclarensis 'Camelliaefolia', two showed some burn. None of the following *x altaclarensis* showed significant burn: 'Belgica', 'James G. Esson', 'Shepherdii'; even 'Wilsonii', which has not been hardy with me, looked well at "Planting Fields."

I. ciliospinosa. All the buds froze on seven large trees, the first time on the largest since 1954. No flowers opened. A few buds opened on a seedling which, I think, may be a hybrid.

I. pedunculosa. There was some burn on a large female, but none on a smaller male growing next to it. Burned leaves dropped with new growth.

I. pernyi. All buds froze on all the males, the first time since 1954. Most of the buds froze on 'Recurva' and some on 'Vetichii'. This bud freeze is new for me.

I. cornuta 'Dwarf Burford' had some burn, and no buds developed. 'Rotunda', for the first time since it was planted in 1958, showed bad burn on the top which was encased in ice. Spring growth has not developed to the point where the top branches show growth. 'Hume' and 'Shiu-ying' were moved this spring, and their top growth has not yet started. An upright cultivar, a female which I obtained from Steed's Nursery near Pinehurst, N.C., showed no burn and is growing very well.

I. crenata. No noticeable damage except on two plants with flat tops in a very exposed position on the north side of the house; they showed some burn. One large plant has had no problem since 1930. 'Glass' and 'Convexa' had no burn. One large 'Helleri' had some burn; others had none. 'Hetzi', which had not wintered too well formerly, was planted in a hedge form and in a protected area and had had no problems there.

I. x meserveae hybrids. Four had no burn. However, 'Blue Angel', of which I have only one older plant, had some burn.

The *cornuta x ciliospinosa* hybrids 'Albert Close' and 'William Cowgill' showed no burn.

The *x aquipernyi* hybrids 'Gable's Male', 'Edward Nosal', and 'San Jose' showed no burn, except one tree of 'San Jose'.

The *aquifolium x latifolia* hybrids 'Chieftan', 'Lassie', and 'Emily Brunner' showed no burn. Incidentally, *latifolia* which is not classed as reliably hardy, is growing beautifully at Malcolm Whipple's place in St. James, Long Island. It showed no burn, although most of his hollies showed more burn than mine.

The *cornuta* 'Burfordii' *x pernyi* hybrids 'Atlas', 'Good Taste', and 'Red Robe' had no burn. A cultivar, which was purchased on Cape Cod as *cornuta* 'Bisex' looks as though it may be in this group. While it has never flowered, it seems very hardy.

The *aquifolium x cornuta* hybrids 'Malcolm S. Whipple' had some burn; and 'Nellie R. Stevens' showed some burn on most plants. Two were badly burned. One the largest of my plants, planted in 1961, the burn was the worst I had ever seen.

My general comment is that hollies, located where the cold drains off, fare much better than those in the center of the Island where the land is flat and the cold settles.

Malcolm S. Whipple St. James, New York

The lowest temperature was -2°F on Max-Min Taylor thermometer. I report on the condition of the following *I. aquifolium*: 'Anqustifolia', four feet, in shrub border. 50% brown, no de-

foliation. Plenty of new growth; now looks fine.

'Boulder Creek', eight feet, in open exposure. 50% brown, no defoliation, new growth satisfactory.

'Barborosa', five feet, in minimal open exposure, no defoliation, new growth satisfactory.

'Dude', seven and a half feet, in half-sun. Totally brown, total defoliation. New growth satisfactory.

'Excort', three feet, in open exposure. No browning, no defoliation. New growth satisfactory.

'Fructu-lutea', seven feet, on east side of house. Normal. New growth satisfactory.

'Hastata', eight feet, on east side of house. Totally brown, total defoliation. New growth satisfactory.

'Imgramii', one and a half foot, in shade. 30% brown. New growth satisfactory.

Unnamed, purple-stemmed, in shade. No browning, no defoliation. New growth satisfactory.

'Pinto', four feet, in shade. Minimal browning, no defoliation. New growth satisfactory.

(Silvar var.), eight feet, on west side of house. 50% brown, no defoliation, New growth satisfactory.

'Scotica', eight feet, in shade. 20% brown, no defoliation. New growth satisfactory.

'San Gabriel', five feet, on east side of house. Minimal browning, no defoliation. New growth satisfactory.

'Teufel's DeLuxe', seven feet, in border shade. No browning, no defoliation. New growth satisfactory.

'Winter Queen', seven feet, in open exposure. 50% brown on south side, no defoliation. New growth satisfactory.

'Zero', three feet, in shade. Minimal browning, no defoliation. New growth satisfactory.

'Crispa', two feet, on east side of house. 50% brown. New growth O.K.

'Argenta-Crispa', two and a half feet, on east side of house. 50% brown. New growth O.K.

The following are *I. x altaelarensis* cultivars:

'Belgica', eight feet, in shade. 20% brown, no defoliation. New growth satisfactory.

'James G. Esson', 10 feet, on east side of house. 10% brown. New growth satisfactory.

'Wilsonii', five feet, in shade. 80% brown, 80% defoliation. New growth slow.

The following are *I. cornuta* cultivars:

'Dazzler', five feet, in half-sun. 50% brown. New growth fair.

'Berries Jubilee', two feet, in shade. Minimal browning, no defoliation. New growth satisfactory.

'Ira Nelson', two feet, in shade. Decimated by rabbits. New growth satisfactory.

'Rotunda', four feet by six feet, on east side of house. 25% brown, no defoliation. New growth satisfactory.

'Burfordii', seven feet, facing south. 80% brown, 80% defoliation. New growth slow.

'Carissa', one and a half feet by two feet, in sun. Decimated by rabbits. New growth O.K.

'Willowleaf', 10 feet, on both sides of house. 60% brown. Flowered well and full of berries. New growth O.K.

I. pedunculosa, five feet, in shade. New growth satisfactory.

I. verticillata, six feet, in shade. New growth satisfactory.

I. ciliospinosa, 12 feet, male and female, on east side of house. No browning, no defoliation. New growth O.K.

I. centrochinensis, three feet, in 3/4 shade. Rabbits completely defoliated. New growth O.K.

I. sugerokii, male and female. Minimal browning, no defoliation. New growth O.K.

I. latifolia, 16 feet, on east side of house. Very minimal browning, no defoliation. Flowered well and full of berries.

I. opaca 'Betty Pride', eight feet, in sun. No browning, no defoliation. New growth O.K.

'Canary', 12 feet, in half-shade. No browning, no defoliation. New growth O.K.

'Clarissa', eight feet, in shade. No browning, no defoliation. New growth O.K.

Named unknown, male, 14 feet, in 3/4 shade. No browning, no defoliation. New growth O.K.

'Vera', two feet, in half-sun. No browning, no defoliation. New growth O.K.

I. x meserveas 'Blue Boy', seven feet, in sun. No browning, no defoliation. New growth O.K. 'Blue Girl', seven feet, in sun. No browning, no defoliation. New growth O.K.

I. x 'Chieftain', 12 feet, in 3/4 shade. 50% browning, no defoliation. New growth O.K.

I. x 'Clusterberry', three feet, in 3/4 shade. Rabbits completely defoliated. New growth O.K.

I. x 'Doctor Kassab', three feet, in 3/4 shade. Rabbits completely defoliated. New growth slow.

I. x 'Emily Brunner', one and a half feet, in shade. Rabbits completely defoliated. New growth slow.

I. x 'James Swan', four feet, in half-sun. Minimal browning. New growth lush.

I. x 'Howard Dorset', three feet, in 3/4 shade. Rabbits completely defoliated. New growth O.K.

I. x 'William Cowgill', three feet, in 3/4 shade. Rabbits completely defoliated. New growth O.K.

I. x 'Lydia Morris', 10 feet, in 3/4 shade. No browning, no defoliation. New growth O.K.

I. x 'Malcolm M. Whipple', 10 feet, in half-sun. 50% browning, most of the south side; no defoliation. Flowered well.

I. x 'Nellie R. Stevens', eight feet, in shade. Total browning, total defoliation. New growth fair.

**Carl A. Totemeier, Jr., Director
Old Westbury Gardens
Old Westbury, Long Island**

The rush of spring activity prevented me from replying at that time to your request for information concerning winter damage to hollies. Since I will not be able to attend the annual meeting, I thought I would comment on the situation to date.

Ilex opaca, of course, suffered no damage, although the temperature did reach at least -13°F in the center of the Island.

Ilex crenata was severely damaged, where fully exposed to sunlight, but suffered little damage where protected from sun and wind. Those frozen back severely have sprouted readily from the base of the stems where the dead material was pruned away. *Ilex crenata* 'Helleri', used as an edging in our formal rose garden, was not damaged severely; that which had been in several years showed no signs of damage. The newly planted *I. crenata* (the spring before) was frozen back somewhat but has recovered fully.

Ilex aquifolium, mostly unnamed, in my neighborhood came through unscathed if protected from sun and wind. Those in the open were defoliated but seem to have recovered, though the foliage is sparse. Those against the south side of the building were

killed to the ground. Several small *I. aquifolium* cultivars, planted in the spring in my own garden, came through unscathed, as did several camellias planted in fall, and protected by light overhead shade and a stockade fence to the west.

The *Ilex aquipernyi* cultivars as well as *Ilex x meserveae* cultivars, both at the Gardens and at my home, came through with no damage.

Ann F. Rhoads, Ph.D., Plant Pathologist
Morris Arboretum, Philadelphia, Pennsylvania

Here is an evaluation of the condition of hollies growing at the Morris Arboretum after the severe winter '76-'77. These notes are based on observations made in March, April, and May. I must emphasize that, in almost all cases, we have only one or at most two specimens of each cultivar. All our hollies are growing in the same general area of the Arboretum, on a relatively protected, south-facing slope. The trees are 10 to 30 years old.

The collection of *Ilex opaca* includes approximately 36 named cultivars (one or two plants of each) growing on a south-facing slope.

Several *I. opaca* cultivars were severely damaged.

'Reynolds' was killed. 'Princeton' suffered severe leaf-scorch and branch die-back. 'John Higgins' suffered some leaf-scorch and some twig die-back. All were growing in sheltered locations with other trees nearby. Only single specimens of each were available for evaluation.

None of the other cultivars of American holly showed any significant winter damage. These include:

'Amy', 'Andorra', 'Arden', 'Betsy', 'Beulah', 'Big Red', 'Canary', 'Carol', 'Delia', 'Farage', 'Fay', 'Felton's Selection', 'Freeman', 'Goldi', 'Griscom', 'Halcyon', 'Harriet', 'Helen Makepiece', 'Hopkins', 'Howard', 'Joyce', 'Judge', 'Brown', 'Laura', 'Mae', 'Manig', 'Old Havey Berry', 'Pearle LeClair', 'Perrine', 'Sara Higgins', 'St. Mary', 'Dick', and f. *xanthocarpa*.

Evaluation of additional hollies in the collection:

Ilex x attenuata 'Foster' (two specimens). One suffered severe defoliation and extensive die-back of branches; new growth is sparse. The other tree was much less severely affected, although it is in a somewhat more exposed situation.

Ilex aquifolium 'Aurea-marginata' suffered severe leaf-scorch, and defoliation was nearly complete by spring. Regrowth is excellent. Very little twig die-back. 'Ingram' had moderate leaf-scorch; regrowth is good.

Ilex x altaclarensis 'Eldridge' showed moderate to severe leaf-scorch and slight twig die-back; regrowth is good. 'W.J. Bean' had moderate leaf-scorch, and 'Hodginsii' had moderate to severe leaf-scorch and also some twig die-back.

Ilex x aquipernyi, no problems.

Ilex x chinensis showed severe leaf-scorch and was defoliated by spring. Branch die-back was moderate. Regrowth is strong.

Ilex cornuta 'Burfordii', 'Femina', and 'Rotunda'--all these cultivars experienced severe leaf-burn and defoliation. Regrowth is strong.

Ilex crenata 'Repandens' had some twig die-back. Regrowth is strong.

Ilex glabra suffered severe branch die-back. Cause uncertain.

Ilex perado var. *platyphylla* had marginal scorch on overwintering leaves. New growth strong.

Ilex pernyi had only very slight leaf-scorch.

Ilex x 'Lydia Morris' had many flower buds blasted by the cold weather but foliage was unaffected. *Ilex x 'John T. Morris'* showed no adverse effects.

Michael Peters, M.D.
Hatfield, Pennsylvania

Location: central part of Buck County. Continuously below freezing for about one month. The lowest temperature was -10°F two nights.

I. opaca 'Old Heavy Berry', 'Clark', 'Menantico', 'Maurice River', 'Eleanor', and 'Merry Christmas' took this severe winter with very little damage, except to a few twigs. 'Lady Alice', 'Canary', and 'Clark', which were exposed on a hill to wind, suffered no damage. Two male opacas, partially protected, came through well.

I. cornuta 'Burfordii', one died, one is half-dead, and one 'Dwarf Burford' is dead. Two 'Burfordii' lost most of their leaves and most of their twigs; the damage was severe, no protection. One which was severely damaged did have good protection. *I. cornuta* 'Rotunda' lost all its leaves, tips of branches, and twigs, but is recovering; it had no protection.

'Dr. Hu', a hybrid of *I. pernyi*, was well protected and suffered no damage at all.

I. aquifolium 'Silvay' had no protection; most of these hollies died, but a few show new growth coming up from the roots. 'Rederly' without protection, died. 'Echo', with poor protection, lost several branches but it has now recovered. Three 'J.C. Van Tol' did extremely well with fair protection. 'Silver Maid' (Brownell), with good to fair protection, did well; no problem with branches or leaves. 'Balkans', with fair protection, lost only one branch, but this was a long, new growth which did not harden. 'Teufel's Deluxe', with good protection, came through well; no loss of branches or twigs. 'Angustifolia', with poor protection, lost a few twigs and a few leaves. 'Brownell's Painted Lady' and his 'Path-O-Gold', with fair protection, lost many leaves and a few twigs; both have recovered. 'Big Bull' also did very well, although protection was poor; no leaves died, but one large branch did.

I. perado, with fair protection, did very well.

I. x altaclarensis, 'Camelliaefolia', with fair protection, came through the winter, but 'Wilsonii', which had poor protection, died. 'Hodginsii', with fair protection, died all the way down to six inches; new growth from the bottom is now doing well. 'Shepherdii', with good protection, did well. However, all new top growth died, old growth and leaves came through well.

I. x aquipernyi, both male and female, exposed on windy hill and with poor protection, did very well, only a few twigs were damaged. *I. x 'San Jose'*, poorly protected, lost several branches, two of them large; it is recovering well.

I. x meserveae 'Blue Boy' and 'Blue Girl', in an open field exposed to wind, came through perfectly.

Ilex crenata, well-protected, suffered no damage. Two plants which were poorly protected, had many dead leaves and twigs

C.A. Van Lennap, Jr.
St. Michaels, Maryland

The lowest temperature was -2°F .

One plant of *x 'Nellie R. Stevens'* was killed out of 80, all the same size, and five were damaged.

One Foster hybrid, 18 feet high, was killed. Six smaller specimens came through O.K. Eight *I. cornuta* 'Burfordii', six feet high, were severely damaged, but may recover. Four *I. cornuta*, six feet high, were damaged.

All are growing in lawn and orchard.

Howard F. Fulton
Cleveland, Tennessee

Temperature of -6°F continued for more than two days.

'East Palatka' (Hastings Nursery), 30 feet high, in an open exposure, was 90% defoliated; very poor "come-back" up to May 1, 1977.

Dwarf yaupon, 15 years old, in western exposure in foundation planting, was completely killed.

Various Japanese holly cultivars, including *I. crenata* 'Helleri', 'Hetzi', and 'Repandens', in a northern exposure, had no damage.

An *I. aquifolium* seedling (parent growing in southern Georgia) suffered no damage in northern exposure. Another seedling, same source, which was transplanted in November 1976, died.

An *I. aquifolium* specimen, 10 feet high, in eastern exposure, suffered no damage.

Hybrid 'Nellie R. Stevens', 15 feet high, in open exposure, also was not damaged.

Tom Dodd, III

Tom Dodd Nurseries

Semmes, Alabama

The factors contributing to winter injury of our hollies were:

1. Very low relative humidity.
2. West and north winds of high intensity (20-30 knots).
3. Our low winter temperature was -8°F, and this occurred at the same time as Nos. 1 and 2.
4. All our losses, listed below, were container-grown plants.
5. All containers were located in open fields with little or no protection. Plants which were in covered, unheated, plastic houses sustained minor or no damage.

Table of Losses

<i>Ilex</i> Species	Cultivars	Loss
<i>Vomitoria</i>	'Stokes Dwarf'	50%
	'Nana'	50%
<i>Cornuta</i>	'Carissa'	30%
	'Rotunda'	25%
	'Burfordii'	20%
	'Dwarf Burford'	20%
<i>Crenata</i>	'Anicet Delcambre'	15%
		15%

Alvin I. Haines

Woodstown, New Jersey

The official lowest temperature for three days in Salem County, New Jersey was; January 17 -2°F; January 18 -3°F; and January 19 3°F.

I lost the following hollies in this long, hard winter '76-'77:

Ilex aquifolium 'Silvary', six feet tall, in a northeastern exposure, wrapped in burlap, well-mulched, and protected by a board windbreak.

I. cornuta 'Burfordii', four feet tall, in a northwestern exposure. I cut this plant off at two inches above ground; now a six-inch shoot is growing from the base of the original plant. I have another 'Burfordii', 10 feet tall, in a southern exposure; it shows no winter-kill.

Three of my *I. opaca* trees, 20 feet tall, have considerable winter-kill. All are in a northeastern exposure.

In our community, several opacas, 18 to 20 feet tall, have been winter-killed; also a large *I. cornuta* in a western exposure.

My *I. pernyi*, *I. crenata* 'Howard' purchased near Williamsburg, Virginia, and a large *I. aquifolium*, 20 feet tall, all came through the winter without any kill; also several small aquifoliums.

Henry Ridgway

Mickleton, New Jersey

Here, southwest of Philadelphia, the temperature did not go below -4°F, but the unusual cold extending through all January and February, with very little rain or melted snow was, I think, the most damaging factor. Our hollies are scattered as foundation plantings and as specimens rather than in an orchard, so that comparisons are questionable.

Hybrid 'Nellie R. Stevens', *I. x meserveae* 'Blue Girl' and 'Blue Girl' seedlings, *I. crenata* 'Helleri', x *aquipernyi* (male and female), *I. aquifolium* 'Teufel's Hybrid', x *altaclarensis* 'Shepherdii', and three male opacas came through with no significant injury. All, except the 'Blue Girl' seedlings and 'Shepherdii', were ten or more years old.

Three English male hollies, which are about 25 years old, had some foliage and twig damage, but no injury to the branches. The English holly female of the same age, which was fully exposed to the north and partially to the west, lost quite a lot of leaves and several twigs. It was heavily berried. These four English hollies came, I believe, from trees planted against the Walton greenhouses in London Grove, Chester, Pennsylvania. They bore no name but seemed to be desirable from the point of view of hardiness, foliage, and fruit.

One female *I. opaca* is nearly 50 years old. It is protected by a large male of the same age and is fairly close to the barn on the west. (This was the tree that the squirrels pruned for berries). It was very heavily berried. There was a lot of twig- and leaf-kill, but the tree is recovering very well. This is a seedling and, since the leaves usually turn brown for the holidays, it should not be propagated.

Another female *opaca*, perhaps 30 years old, was also very heavily berried. It was fully exposed to the north and nearly so to the west. I thought that it was only slightly injured. However, the top six or more feet have shown no sign of life and there are few leaves on the lower half. Only now is new growth appearing and very little of that. This is also a seedling *opaca*; the berries were large, if light red, and the foliage good. A yellow-berried *opaca*, about 30 years old, is sheltered from the north, but not the west; it suffered only twig- and leaf-kill.

The fact that both these two very heavily berried female opacas were hurt by the cold and that male opacas, which touched each of them, were uninjured suggests to me that the heavy crop of berries may have been a major factor of the damage. The exposure of the trees in each pair was similar, if not identical. These female trees had come through previous winters with slight, if any damage.

Four female opacas, purchased from Dilatush about 1950, which are located in an abandoned apple orchard, came through this past winter with no unusual injury. I have lost the name of this cultivar, but it is not outstanding in any way.

Patricia Lee, President

Oregon Holly Growers, Inc.

Milwaukie, Oregon

While the East Coast reeled under extreme cold, snow, and ice, The Pacific Northwest was enjoying drought conditions with snow in December and January. There was enough cold weather, however, to ripen and harden the berries for commercial cutting.

There is no evident damage, since spring rains seemed to have given the hollies the needed moisture.

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Collected this data on winter injury to hollies, as rated below, during June, 1977.

The winter of 1976-77 was the coldest winter on record for New Jersey. Observations on the amount of winter injury sustained by plants in the holly collections at the Rutgers University Research and Display Gardens serve to highlight the fact that winter hardiness can be quite complex and very difficult to delineate or describe. Plants of *Ilex opaca* 'Jersey Knight' and 'Jersey Princess' exhibited no winter damage. This was not surprising, since plants of these two cultivars represent the upper limits of winter hardiness among plants of this species. What was unexpected was the observation that plants of cultivars rated borderline for winter hardiness in previous years showed little, if any, winter injury after the winter of 1976-77. On the other hand, winter injury to plants of *Ilex crenata* was unusually severe.

Subjective ratings of winter injury exhibited by hollies growing in the field at the Rutgers University Research and Display Gardens in North Brunswick, New Jersey are given below.

Ilex crenata

Scale: 1 = no winter injury
 2 = slight winter injury
 3 = moderate winter injury
 4 = severe winter injury
 5 = plant dead

Cultivar or Selection	No. of Plants Scored	Condition of Plants	Average
'Braddock Hiehgts'	1	2.5	2.5
'Buxifolia'	3	1.5, 2, 1	1.5
'Canton'	2	3.5, 2.5	3.0
'Changsha'	2	4, 3	3.5
'Chengtu'	2	4, 3	3.5
'Cherokee'	3	2, 2.5, 1.5	2.0
'Compacta'	5	3.5, 3, 5, 3, 2.5	3.4
'Compacta' (Schwoebel)	3	3, 3.5, 2.5	3.0
'Convexa'	10	3, 2, 2, 2, 2, 1.5, 2.5, 2.5, 2, 1	2.05
'Curtis Askew'	1	4.5	4.5
Deverman's 'Laurifolia'	2	2.5, 2	2.25
Dodd's Spreader	3	4.5, 3.5, 2	3.33
'Dwarf Cone'	3	2.5, 3.5, 2.5	2.83
'Ed. B. Dozier'	3	3, 3, 4	3.33
'Excelsa'	1	3	3.0
'Firefly'	2	3, 2.5	2.75
'Glass'	2	2, 3	2.5
'Glory'	2	4, 4	4.0
'Green Cushion'	3	2, 5, 1.5	2.83
'Green Island'	2	2.5, 1.5	2.0
'Green Lustre'	3	1.5, 2, 2	1.83
'Green Pygmy'	2	3, 4	3.5
'Green Thumb'	4	4, 3, 2.5, 2	2.87
'Haliana'	3	4, 3, 4	3.66
'Helleri'	10	3.5, 3, 3, 2, 3, 2, 4, 2, 4.5, 5	3.20
'Helleri' Mutation (Tom Dodd's)	3	5, 4, 4	4.25
'Hetzi'	3	3.5, 2.5, 4	3.3
'Highlander'	3	3.5, 4, 4	3.7
'Hoogendoorn'	4	2.5, 2.5, 2.5, 1	2.12
'Howard'	1	4	4.0

'Hatfield'	2	4, 4.5	4.25
'Ivory Tower'	1	4.5	4.5
'John Nosal'	2	2, 2	2.0
'Kingsville'	4	3, 1.5, 1.5, 3.5	2.37
'Kunming'	2	4, 3.5	3.75
<i>latifolia</i>	6	4, 4, 4, 4, 4, 4	4.0
<i>latifolia</i> 'Nigra'	2	3, 3	3.0
'Little Gem'	3	4, 3.5, 2	3.16
'Longfellow'	2	3, 2.5	2.75
'Luteo-Variegata'	2	2, 2	2.0
'Magda'	5	2.5, 2.5, 2.5, 2.5, 4	2.80
'Mariesii' (<i>nummularia</i>)	2	3, 3	3.0
'Major'	2	2.5, 3	2.75
'Maxwell'	3	3.5, 4, 3	3.5
'Mentor Dense'	2	3.5, 3.5	3.5
'Mentor Glossy'	5	3, 2, 2, 3, 2	2.40
'Miss Muffet'	1	3.5	3.5
'Morris Dwarf'	2	4, 4	4.0
'Nanking'	2	3.5, 3.0	3.25
<i>nummularia</i>	5	5, 4.5, 2.5, 5, 4.5	4.12
'Nymph'	1	1.5	1.5
'Oleafera'	2	3, 3	3.0
'Orchard'	1	3	3.0
'Peking'	2	3, 3	4.0
'Petite Point'	3	1.5, 3, 2.5	2.33
'Pride Dwarf'	4	3, 3, 3, 3.5	3.12
'Pride Gem'	2	3.5, 3.5	3.5
'Pride Jewel'	2	4, 3	3.5
'Repandens'	2	4, 4	4.0
'Robert Culpepper'	3	3.5, 3, 4.5	3.67
'Rotundifolia'	3	4, 4.5, 4	4.16
'Sensation'	1	3	3.0
'Sentinel'	5	4, 3.5, 3, 3.5, 3	3.40
'Shanghai'	2	2.5, 1	1.75
'Sir Echo'	1	4.5	4.5
'Special'	3	2.5, 2.5, 2	2.33
'Spreading Glass'	3	1.5, 2.5, 2.5	2.17
'Stokes'	4	4, 4, 4, 3.5	3.87
'Tennyson'	4	2.5, 1.5, 1, 1.5	1.62
Tingle #1	2	3, 2.5	2.75
'Tiny Tim'	3	3.5, 3.4	3.45
'Valeria Rankin'	3	2.5, 2, 1.5	2.0
'Variegata'	2	2.5, 3	2.75
'Vaseyi'	2	2.5, 3	2.75
'Wiley Glass'	2	2, 2	2.0
'William Jackson'	3	3.5, 3.5, 4	3.67
'Willow Leaf'	2	4, 3.5	3.75
'Yunnan'	2	4, 4	4.0

Ilex aquifolium. Virtually no winter injury; the plantings involved many plants which sustained severe winter injury during winter 1962-63.

Ilex x aquipernyi Gable's No. 2 and other selections. No winter damage.

Ilex chinensis. Different seedlings exhibited moderate to very severe winter injury.

Ilex cornuta 'Rotunda'. Very little winter injury. Plants of other clones exhibited slight winter damage.

Ilex latifolia. Very little winter injury on plants in protected locations, but moderate to severe damage to plants in exposed sites.

Ilex pernyi 'Recurva'. No winter injury.

Ilex x 'Blue Boy'. Two plants exhibited slight winter injury.

Ilex x 'Blue Girl'. Two plants exhibited no winter injury, and one

plant exhibited slight winter injury.

Ilex x 'Blue Prince'. One plant, no winter damage.

Ilex x 'Nellie R. Stevens'. A plant, six feet tall, exhibited complete defoliation but no twig damage.

Ilex x 'Foster No. 2'. A plant, 14 feet tall and well-established in a protected location, exhibited severe winter injury.

ADAPTABILITY OF HOLLY IN KANSAS

by John C. Pair and Steven M. Still

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Kansas climate is characterized by rather hot summers and often dry, cold winters with little or no snow cover. Holly is not native, except for *Ilex decidua* in a few southeastern counties, but many species are used in landscapes, especially in the eastern half of the state.

Injury or loss of holly in Kansas can be caused by summer stresses but more frequently from low temperatures and/or desiccation during winter. Since Kansas is divided in hardiness zones, test sites were chosen to test species and cultivars at Wichita (zone 6) and Manhattan (zone 5) (USDA Hardiness Map). Those two zones are typified by *Ilex cornuta* Lindl. 'Burfordii', which generally survives at Wichita but is not hardy in Manhattan (1).

Since many evergreens are injured by winter desiccation when water lost by transpiration is not replaced from frozen soil (3) and damage may be more severe on a south exposure where temperatures fluctuate more rapidly than on the north (2), holly selections were tested under both exposures at each location. Plants were established from gallon containers on both sides of a five-foot solid fence in 1973. The results on hardiness, growth, and fruiting are shown in Table 1. As the winter of 1976-77 was very severe throughout eastern United States, particularly to holly, we included spring, 1977, evaluations. Except where noted, all plants

survived until the winter of 1976-77. Table 1 indicates plants which survived the 1976-77 winter. The lowest temperature at Wichita was -7°F ; at Manhattan, -16°F .

I. opaca (American holly) cultivars, as expected, survived best but hardiness varies among cultivars. Those surviving the 1976-77 winter at Manhattan on both exposures were 'Jersey Knight', 'Judge Brown', 'Merry Christmas', and 'Miss Helen'. All other *opaca* types on the northern exposure winter-killed.

I. cornuta (Chinese holly) selections were more tolerant of the sunny exposures than *I. crenata* (Japanese holly) types, although nearly all winter-killed at Manhattan. At Wichita, 'Dwarf Burford' was killed on the north but survived on the south where it was only 2°F warmer. 'Dazzler' has been the most fruitful Chinese holly, but its flower buds usually are injured before it flowers. The USDA hybrid 'William Cowgill' has fruited at Wichita.

I. crenata selections performing best are 'Highlander', 'Rotundifolia', and 'Sentinel', but desiccation was pronounced the very dry winter of 1976-77.

I. aquifolium suffers much desiccation, although 'Balkans', 'Boulder Creek', 'James G. Esson', and 'Zero' have done well in winter shade but have never borne fruit.

The *I. x meserveae* hollies show good potential at both locations on a northern exposure.

Interspecific hybrids showing good growth and appearance at Wichita include 'Dr. Kassab', 'Foster's No. 2', 'Lydia Morris', 'Nellie R. Stevens', and 'San Jose', although many are not hardy at Manhattan.

See Table 1, page 30.

LITERATURE CITED

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3. White, W.C. and C.J. Weiser: The Relation of Tissue Desiccation, Extreme Cold, and Rapid Temperature Fluctuations to Winter Injury to American Arborvitae. Amer. Soc. Hort. Sci. 85:554-563. 1964

Table 1. Results from Holly Exposure and Hardiness Trials; Wichita, and Manhattan, Kansas -- 1977

Name of <i>Ilex</i> species and/or cultivar	Injury rating ^{1/} Spring 1977		Wichita (Zone 6)				Size (inches) Fall 1976		Manhattan (Zone 5) Injury rating ^{1/} Spring 1977	
	South	North	Fruit ^{2/}		South		North		South	North
			South	North	HT.	Spd.	HT.	Spd.		
1. <i>aquifolium</i> 'Argenteo-Marginata'	1.5	1.5	0	0	17	22	11	17	NP	NP
2. <i>aquifolium</i> 'Balkans'	3.7	4.7	0	0	20	18	25	23	NP	NP
3. <i>aquifolium</i> 'Boulder Creek'	3.0	4.7	0	0	26	24	29	26	NP	NP
4. <i>aquifolium</i> 'Zero'	3.0	2.0	0	0	18	27	17	13	NP	NP
5. x <i>altaclarensis</i> 'J. G. Esson'	1.0	5.5	0	0	17	11	23	22	NP	NP
6. x <i>aquipernyi</i> 'Brilliant'	2.0	2.0	0	0	16	19	26	26	Winter-killed, 1975-76	
7. x <i>aquipernyi</i> 'San Jose'	7.7	8.3	1R	2R	30	21	49	22	3.3	4.5
8. x 'Foster's No. 2'	7.0	3.3	3BR	3.7BR	60	36	54	30	6.5	1.7
9. <i>cornuta</i>	3.3	1.3	0	0	44	28	43	30	2.3	1.0
10. <i>cornuta</i> 'Carissa'	5.0	5.0	0	0	13	20	12	17	died 1973	3.0
11. <i>cornuta</i> 'Dazzler'	5.0	3.7	1DR	1DR	27	25	30	30	2.0	winter-killed, 1975-76
12. <i>cornuta</i> 'Dwarf Burford'	2.0	1.0	0	0	30	30	33	33	NP	NP
13. <i>cornuta</i> 'Rotunda'	4.0	1.0	0	0	14	23	13	20	died 1973	NP
14. x 'Nellie R. Stevens'	6.0	3.7	10R	10R	42	38	37	38	2.0	2.0
15. x 'Albert Close'	6.0	1.0	0	0	53	31	44	17	NP	NP
16. x 'Edward Goucher'	5.0	1.0	0	0	46	19	29	18	NP	NP
17. x 'Harry Gunning'	5.0	8.0	M	M	32	27	43	24	NP	NP
18. x 'William Cowgill'	4.0	8.0	1DR	1R	26	25	20	27	NP	NP
19. x 'Lydia Morris'	6.0	8.0	30R	2DR	26	22	34	21	died 1974	1.0
20. x 'Doctor Kassab'	5.0	8.0	1DR	1DR	42	29	50	26	3.0	died 1974
21. <i>crenata</i> 'Compacta'	3.0	3.3	0	0	20	30	21	24	winter-killed, 1975-76	
22. <i>crenata</i> 'Convexa'	1.0	1.0	0	0	8	9	died, Summer 1974		NP	NP
23. <i>crenata</i> 'Helleri'	1.0	NP	0	--	9	12	NP	NP	NP	1.0
24. <i>crenata</i> 'Highlander'	6.3	1.3	0	0	19	17	18	19	3.0	1.0
25. <i>crenata</i> 'Red Lion'	1.0	4.0	0	0	7	10	8	11	winter-killed, 1975-76	1.0
26. <i>crenata</i> 'Rotundifolia'	NP	1.0	--	0	--	--	24	26	NP	NP
27. <i>crenata</i> 'Sentinel'	6.0	2.0	0	4B	34	29	37	30	1.0	winter-killed, 1975-76
28. x <i>meserveae</i> 'Blue Angel'	NP	1.0	--	0	--	--	18	19	NP	4.0
29. x <i>meserveae</i> 'Blue Girl'	NP	8.0	--	1R	--	--	33	33	NP	8.0
30. x <i>meserveae</i> 'Blue Prince'	NP	Died, Summer 1973	--	--	--	--	--	--	NP	2.0
31. x <i>meserveae</i> 'Blue Princess'	NP	7.0	--	3BR	--	--	31	33	NP	1.0
32. <i>opaca</i> 'Farage'	7.0	4.3	3BR	4BR	23	18	33	22	7.3	1.0
33. <i>opaca</i> 'Goldie'	7.0	4.0	4Y	5Y	48	32	59	35	7.0	1.0
34. <i>opaca</i> 'Greenleaf'	NP	1.0	--	4DR	--	--	45	29	2.0	1.0
35. <i>opaca</i> 'Jersey Knight'	8.0	9.0	M	M	31	25	42	25	7.7	4.7
36. <i>opaca</i> 'Judge Brown'	7.7	1.0	3DR	0	26	23	15	14	6.5	5.0
37. <i>opaca</i> 'Laura'	8.0	5.0	4R	5DR	30	19	36	20	NP	NP
38. <i>opaca</i> 'Manig'	8.0	6.0	4BR	4BR	41	28	41	30	8.0	2.0
39. <i>opaca</i> 'Merry Christmas'	8.0	8.0	4BR	5DR	30	20	47	19	7.7	4.0
40. <i>opaca</i> 'Miss Helen'	7.3	6.3	4DR	4DR	44	33	56	30	8.0	7.0
41. <i>opaca</i> 'Old Heavy Berry'	7.3	3.7	3R	2R	34	21	30	20	7.0	1.0
42. <i>opaca</i> 'St. Mary'	8.5	8.0	5DR	3BR	28	19	45	19	7.0	2.3
43. <i>opaca</i> 'Warrior'	NP	8.0	--	M	--	--	39	24	8.0	2.0
44. <i>pendunculosa</i>	Died, Summer 1973									
45. <i>pernyi</i>	1.0	2.0	0	0	6	8	9	11	NP	NP
46. <i>vomitaria</i> 'Grey's Littleleaf'	2.0	Winter-killed 1974-75	0	--	34	20	--	--	NP	NP
47. <i>vomitaria</i> 'Pride of Houston'	1.0	NP	0	--	34	29	--	--	NP	NP

^{1/} Scale of 1-9 with 1 = dead, 9 = no appreciable injury. Avg. of 3 replications per exposure.

^{2/} Scale of 0-5 with 0 = none, 5 = most. Symbols: B = black, R = red, BR = bright red, DR = dark red, OR = orange red, Y = yellow, M = male species.

Plants were established from 1-gallon size May 15-16, 1973, on both sides of a 5-foot, solid-broad fence. NP = not planted.

We remind Members of THE AIMS AND PURPOSES of the Holly Society of America and suggest that they bring them to the attention of friends and others who are interested in and growing holly, but do not know the advantages of the Society.

1. To bring together persons interested in the genus *Ilex* and to collect and disseminate information about holly and its culture, and its many uses.

The Holly Society of America holds an annual meeting in the fall of each year. Holly enthusiasts, amateur and professional alike, gather from throughout the United States for a meaningful exchange of holly growing experiences and for fellowship with persons of similar interests. The Local Chapters of the Society hold at least one meeting each year in their local area. The National and Local meetings are open to all members and their guests.

Speakers of broad knowledge and experience in the culture and use of hollies are engaged for the national meetings. Proceedings of each national meeting are published and sent to all members of the Society.

2. To promote research in the various cultural and physiological aspects of growing holly; to locate, evaluate, select and designate superior clones, selections, and/or named varieties of holly; and to encourage the investigation and control of insect pests and diseases of holly.

A Research Development Committee is active and includes sections on soils, insects, and diseases. This Committee evaluates and collects literature pertaining to hollies for publication in the *Holly Letter*.

3. To locate and preserve, if possible, holly stands of extraordinary natural beauty and to encourage the establishment of "Living Memorials" of native holly stands. Also, to designate official Holly Arboreta and make their locations known to the public.

The Society is conducting a survey to locate the oldest and largest plants of American Holly (*Ilex opaca*) in the United States and has been responsible for the preservation of select specimens as state monuments or as the focal point in the establishment of small state parks.

4. To promote and publicize the use of holly as landscape material and as a decorative material.

The Publicity Committee of the Holly Society of America has an active program devoted to the promotion of hollies on a national scale.

5. To honor those persons who have made outstanding contributions to holly culture.
6. To act as the official authority for the registration of new varieties of holly.

The Holly Society of America is the official International Registration Authority for the genus *Ilex*. Any person desiring information concerning the proper procedures involved in correctly selecting the name for and registering a new cultivar should contact the Holly Society of America.

7. To assemble a collection of books, bulletins, and other literature on holly for those persons interested in holly and to establish a central place where individuals may secure information on holly.

The Holly Society of America publishes the *Holly Letter*, three (3) times each year, to provide for the dissemination of information of interest and importance to all holly enthusiasts. The *Holly Letter* is sent to all members of the Society.

The Society has published, and offers for sale many Bulletins containing useful information on the culture and care of holly.

In addition, the Society maintains a library of 2" x 2" color slides depicting holly production, culture, and the use of hollies in the landscape and/or in floral arrangements. These slides are available to Society members for lectures and/or demonstrations before garden clubs, civic organizations, and any group of interested persons.

If you would like applications for membership, Bluett Green, Jr., Secretary-Treasurer, will gladly send them upon request. His address: 407 Fountain Green Road, Bel Air, Maryland 21014