



HOLLY LETTER

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Hollies in the Arboretum, Revisited

J. A. WITT

Nine years ago Mr. B. O. Mulligan's article, "Hollies in the Arboretum" (ARBORETUM BULLETIN, Winter 1952, p. 17) appeared in this BULLETIN and constituted the first report on the then two and one-half year old holly collection near the south end of Arboretum Drive North. We now take this opportunity to report on new plantings, how the collection has fared through the intervening years, and some further evaluation of the plants.

The collection has grown from twenty species, thirty varieties and five hybrids to twenty-six species, sixty-eight clones and seven hybrids, the main additions being among the *I. Aquifolium* clones. Several other species and varieties now in the lath house or nursery are awaiting planting, including several yellow fruited forms of the American holly, *Ilex opaca* var. *xanthocarpa* and the Japanese *Ilex Sugeroki*. The new bed reported in the 1952 article is now fully planted and is joined with the area below and west of the main collection where there are a number of plants in the grassy area. These are largely the English holly, *Ilex Aquifolium*, or its hybrids.

The collection has grown well, and despite the very severe winter of 1955 very few plants were killed, although many were cut back to some extent. The November 1955 freeze took three of four *Ilex chinensis*, *Ilex rotunda* from Japan and Korea, *Ilex vomitoria*, Yaupan, from the southeastern U.S.A., and one plant of *Ilex glabra*. Several Chinese hollies, *Ilex cornuta*, were very badly damaged, together with *I. Cassine*, Dahoon, *I. opaca* 'East Palatka,' and several of the *I. altaclarensis* clones.

On the credit side many of the plants have made very notable growth, particularly the *Aquifolium* and *altaclarensis* forms, and several of the other species have grown exceptionally well. Recent height measurements show this very clearly. At the end of twelve and one-

half years some of the plants were very close to twenty feet tall. Below is a selected list of heights demonstrating their growth rate. All of these reported were less than six feet tall when put out in 1949:

<i>Ilex Aquifolium</i> 'Angustifolia'	14'
" " 'Bacciflava'	16'
" " 'Variegata'	11'
" <i>altaclarensis</i> 'Shepherdii'	18'
" " 'Camelliaefolia'	16'
" <i>chinensis</i>	19'
" <i>ciliospinosa</i>	16'
" <i>opaca</i> 'Merry Christmas'	16'
" " 'Hampton' (planted 1952)	13'
" <i>pedunculosa</i>	18'
" <i>Pernyi</i>	14'

Our records show that the tallest plant in the collection, *I. chinensis*, has grown nine feet since October, 1955—a very respectable rate of eighteen inches a year.

Many of the plants are now reaching a stage where we can pass some judgment as to their ability to perform here. The north bed which was most recently planted and has relatively few specimens worthy of mention although a six or seven foot specimen of *Ilex Aquifolium* 'Handsworthensis' planted in 1954 is showing considerable promise. It has relatively small spiny leaves, purple wood and large clusters of bright red, medium sized fruit.

A very interesting pair of hollies is growing at the south end of this bed, *Ilex Pernyi* var. *Veitchii*, planted in 1952 and now about ten feet tall, with a loose habit and small, few-spined, oval leaves arranged flatly along the thin branches. The fruit is large and dark red held tightly to the underside of the leaves. Generally speaking, it is most unlike *I. Pernyi* but was identified for us by Arnold Arboretum.

In the grassy area south and west of the main collection we find a very striking group of three bold-leaved plants which had their tops cut out by the 1955 freeze but are now about eight feet tall. They have a dull green, broadly ovate leaf with few to many spines, quite obviously veined on the upper surface. We received these as *I. Perado* var. *platyphylla* but feel that they are most likely *I. altaclarensis*, the presumed child of a marriage between *Ilex Aquifolium* and *I. Perado* var. *platyphylla*. To date they have not fruited but have such good foliage that it doesn't really matter.

Some interesting foliage variations may be found in the bed containing the English holly varieties. At

the south end a group of the slender *I. Aquifolium* 'Angustifolia', have reached nearly 15'. These probably have the narrowest habit of any of their type, even the leaves are narrow and long, dark green and few spined. They are female, but produce fruit only rarely. More free fruiting are the yellow-berried hollies, *I. Aquifolium* 'Bacciflava,' growing to the north. These appear to be the normal type of English holly until the fruits ripen in November, then they take on a golden hue from the large clusters of bright yellow fruits. There are silver and golden variegated forms including the ferociously armed variegated hedgehog holly, 'Ferox Variegata,' of which we also possess the green-leaved form. To the west in this bed the smooth, shining leaved 'Jan van Tol' (or 'J. C. van Tol') has developed into a spreading specimen of open habit beset with handsome dark red fruit.

Directly south we find the bed devoted largely to the *Ilex altaclarensis* group, containing several outstanding varieties. The tallest is a pair of the clone we are calling 'Shepherdii' although there is some dispute as to its correct name—it might well be 'Hodginsii.' Regardless of nomenclature difficulties, they are most striking, with large shining green leaves, erect habit and quantities of large bright red fruit (fig. 12). The 'Camelliaefolia' group is not quite as tall but has larger leaves, three to five inches long, armed with a very few spines. The fruit of this cultivar is very large and somewhat darker red than most. With its shapely pyramidal shape and lustrous foliage it must be considered among the most ornamental of its type.

West of this bed is another planted to the oriental hollies, largely species though a few hybrids are included. *Ilex ciliospinosa*, a western Chinese holly growing here, has small, stiff flattish evergreen leaves set with a few weak spines, and an open semi-pendulous habit. Our plants unfortunately are male so we shall not see the fruit until we find a female companion.

One of the more unusual hollies in our collection is growing nearby. This is *Ilex latifolia*, from Japan, which is developing slowly into a large shrub. The foliage is much like a cherry-laurel, large and thick with a dull green color. It is not fruiting this year but has in the past, when it produced tight clusters of brick-red fruits at the ends of the shoots. Another spineless holly, *Ilex integra*, is also found here and is slowly developing into tree form. Our plants, with shining green leaves, are all male but we have a female in the nursery ready to join them soon.

The bed containing the various clones of Japanese holly, *Ilex crenata*, also has our largest holly tree, *Ilex chinensis*. As mentioned earlier this plant is the sole survivor of the 1955 freeze and may be of sturdier constitution than its fellows. Now about 19 feet tall it has a gracefully erect habit and is well clothed with spineless light green leaves. Since it hasn't flowered we

don't know if it is male or female. The lovely long-stalk holly, *Ilex pedunculosa*, is planted nearby where its dark green spineless foliage contrasts well with the lighter green of the *I. chinensis*. This Japanese species should be planted more widely since it is much hardier than the English holly and is most attractive with large red fruit carried on long peduncles.

The many forms of *Ilex crenata* are worthy of study since the Japanese holly appears to be a very plastic species. In its typical form our plants have assumed a thick shrubby habit, but other forms such as the clone 'Glass' appear to be much taller and more open growing. The dwarf clones 'Helleri' and 'Kingsville' reported in the 1952 article are still little mounds of emerald having achieved a mature height of less than 14 inches. In the center of this bed there is one of the more weird plants in the Arboretum. Any book or article on hollies will tell you that *Ilex crenata* 'Mariesii' is a low growing twisted form with round coin-like leaves, ideal for the rock garden. Our plant, donated to the Arboretum by Mr. Donald G. Graham in 1955, has small leaves crowded at the end of the shoots, as it should have, but could under no circumstances be considered as a rock garden subject since it is at least ten feet tall with gaunt twisted branches sparsely arranged on a tall erect trunk. Cuttings from this plant are beautiful little "bonsais," but all show signs of the legginess that makes their parent so distinctive.

The deciduous holly bed is by no means full though there is a fine group of the black alder, *I. verticillata*, whose small orange-red fruit makes such a brilliant contrast to the yellow autumn foliage. Superficially the black alders appear very similar to our plant of *Ilex serrata* var. *argutidens* from Japan, at least in leaf and fruit, but the Japanese plant is much taller—nearly eleven feet as opposed to seven.

Finally there is the grouping of American hollies, *Ilex opaca*, in the bed north of the last. There has been considerable activity in selecting superior forms of this hardy American species among the growers on the Atlantic seaboard and our collection contains some very fine cultivars. The somewhat spreading form and freely produced bright red fruit of 'Emily' make it a favorite of most visitors. 'Merry Christmas' is another clone that has been much admired, more erect than 'Emily,' pyramidal in outline, it has quantities of somewhat dull red fruit. The American holly will probably never supplant the English holly in the Northwest since its foliage is not as lustrous a green nor are the berries so startling a red, but for those climates too rigorous for *I. Aquifolium*, *Ilex opaca* fills a definite need.

The holly collection is now half-way to a quarter century old, and has done well in twelve and one-half years. It would be fun to read a similar report to this in the Winter issue of THE ARBORETUM BULLETIN of 2049 A.D.



Ilex X Altiacalensis 'Sbepperdi'
in fruit.

PHOTO BY: WM. ENG

FIG. 12



Ilex crenata var. *Mariessii*, fruiting branch.

PHOTO BY: CAMPUS STUDIOS

FIG. 13

Propagation of Holly

J. HAROLD CLARKE*

As is true with most woody plants, hollies can be propagated by seed, layering, cuttings and grafting, although nearly all commercial propagation is by cuttings. The other methods, however, have just enough importance to warrant their inclusion in a general discussion of the subject.

Practically all plants can be grown from seed and hollies are no exception, but the seeds, at least of the tree hollies, are hard coated, and many will take two years to germinate. The seedlings will vary considerably and may be quite unlike the tree from which the seed came. Figures reported for the native eastern holly (*Ilex opaca*) indicate that more than half the seedlings will be male and hence will produce no berries, although it is impossible to tell the sexes apart until the trees are old enough to bloom. It would seem best, therefore, to leave seed propagation to the plant breeders or those who are engaged in some phase of research.

Layering of low-hanging branches is not difficult but the resulting plants will, for a while, lack the symmetry which makes the young holly tree so attractive. This would be a way to obtain a start from a neighbor's tree where no one involved has facilities for, or interest in, the growing of cuttings.

Cuttings provide a relatively easy, rapid way to obtain plants genetically identical with a desirable form or variety, provided a few small twigs may be snipped off, if necessary in an inconspicuous place so the original tree need not be disfigured in any way.

Late fall or early winter is the usual time for making holly cuttings although I suspect a good propagator could find wood which would root during a large part of the year. Our own procedure has been as follows. We take mature tip cuttings, preferably from fairly vigorous growth at the outer tips of the branches, although shoots inside the tree, or near the ground, may be used if it is important not to mar the appearance of the plant. The cuttings are made about four inches long and all leaves stripped off except two or three at the tip. We then wound the base of the cutting by slicing the bark from one side, extending about an inch from the base. This is done by making a quick scraping stroke with the blade of the pruning shears immediately following their use to shorten the cutting to the desired length. After a little practice, cutting off the unwanted part of the twig and making the wound becomes almost a single operation. Most cuttings would root without the wound but it exposes more cambium tissue and roots tend to come out along the stem rather than just at the base.

The use of a root-inducing hormone, like wounding,

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is not entirely necessary, but tends to give better and more rapid rooting. We use a home-made preparation containing .8% indole butyric acid in talc, essentially the same as Hormodin No. 3. The base of the cutting is dipped in the powder, the surplus flicked off, and the cutting placed in the rooting medium. Other hormone materials, liquid as well as powder methods of application, have been used successfully by others.

As a rooting medium we have used straight sand and straight peat, as well as a mixture of about half and half sand and peat. Rooting has been reasonably good in each of these media but the sand and peat mixture would probably be the most satisfactory.

It is important to keep both medium and air relatively moist during the rooting period. This is done on a large scale by covering the propagating bench or box with polyethylene sheeting. It is also advisable to use bottom heat, usually an electric heating cable, to maintain the temperature of the rooting medium near 70° F., until roots have formed.

For the gardener with a greenhouse growing holly cuttings offers no great challenge. Lacking that equipment a plastic-covered box in the kitchen window or in the basement may be used but it will be more difficult to control moisture and temperature. Hollies are sometimes propagated commercially in cold frames and there is no reason the home gardener cannot do likewise. For a cold frame it would be advisable to take the cuttings as early as possible, August or even early July or as soon as the tip growth has matured beyond the soft, actively growing condition. Prepare the cuttings as previously indicated, insert in the medium, water in well and then put on a tight sash or plastic cover. The frame should be at least partially shaded and of course should have been built in such a way that it is well drained so that it can be wet down thoroughly without danger of waterlogging. Some cuttings will probably root before winter, some the following spring, but all might be left in the frame until the following fall before planting them out in a nursery bed in a reasonably protected place.

Presumably the readers of this article will be most interested in varieties of English holly but the above directions should be satisfactory for any of the evergreen, tree-type hollies. Deciduous types, rare here, would be grown from seed, as a species rather than a clone, or from hardwood cuttings taken in late winter, or softwood cuttings taken in early summer. The shrubby hollies, of which there are a number, may be grown from cuttings taken during mid- or late summer. There are some variegated types which tend to sport back to the solid green leaves. With such plants, one must select the cuttings somewhat carefully to maintain the pattern of leaf variegation desired.

In years gone by desirable varieties were occasionally propagated by grafting or budding on seedling understocks. This is not very difficult, using budding or graft-

ing methods normally employed for fruit trees, but it is considerably more bother than making cuttings, and there is always the chance of the scion breaking out and the seedling understock taking over.

The one place where grafting would be useful is in changing over a tree already in the landscape, to make a berry-bearing tree out of a male, or possibly to graft in a few male branches in order to provide pollen, more quickly than could be done by planting a male tree. Before grafting in pollinizers it would be well to be sure the tree is a female that blooms but fails to set fruit because there is no male tree in the neighborhood. In many Northern residential areas there are already many holly trees with a scattering of males, enough to supply pollen for the entire neighborhood.

One of the reasons I like a holly tree is its lush symmetry which top-grafting will spoil for several years, if not permanently. Therefore I would in most cases seriously consider planting a tree of the desired variety rather than working over one already established.

Where top-working does seem to be desirable the methods are essentially the same as for fruit trees. If the need is for a pollinizer, budding or whip-grafting can be used out near the tips of the branches to insert a few pollen-bearing twigs without materially altering the general conformation of the tree. If the tree is a male and berries are wanted it would be a big job to insert enough such grafts to change over the tree without making it look unsightly, at least for a few years.

A small tree may be changed over completely by cutting off its main trunk and putting in a cleft graft from which a whole new top may be formed. With a larger tree cleft grafts may be set in the larger limbs as well as the main trunk. A few smaller branches may be left to provide leaf surface for a year or two, before they are removed to complete the "changeover."

The cleft graft is usually made in limbs from one to three inches in diameter, sawed squarely off where the graft is desired. The stub is split with a grafting tool, or a chisel, and the cleft opened with a small wedge. The scions, usually two to a stub, are one-year twigs of the desired variety, about five inches long with a bud and a leaf at the tip. The base of the scion is wedge shaped, a bit thicker on the outside as inserted into the cleft. The scions are usually at a slight angle to insure contact of the cambium layers (lying between the bark and the woody cylinder). A liquid or soft grafting wax should be used to cover the exposed wood of the stub, sealing well around the inserted scions. When grafting evergreen material such as holly it will help materially to cut down water loss from the scion if a plastic bag is put over the graft and tied tightly to the stub. The bag and ties should be removed as soon as it is evident that the graft has "taken." such top-working will have the best chance for success if carried out during early spring, just before growth starts. The scions should be dormant, even if it

means keeping them in a plastic bag in a refrigerator for a few days until time can be found to complete the job.

Holly Propagation for Amateurs

DR. A. G. ZOET*

This is the story of a rank amateur who struck it rich. For the amount of time devoted to the propagation of holly, and incidentally many other broadleaved evergreens, we face the same fate as the fabled Sorcerer's Apprentice. Right now the nursery area is full; we need a new lathhouse; we need more time for our hobby (avocation). Our experience goes back about five years, when the holly project was recovering from the 1955 cold snap. Anyone working with plants has vivid memories of that year. Our final losses totalled about 50% of the planting. We felt that the surviving stock would be the best possible source of cuttings for replacement and future expansion. Therefore, we had to learn another skill if our planting was to develop properly.

Our first good bit of advice came from the Arboretum nursery. Among other things, we were introduced to "Plant Propagation Practice" by J. S. Wells.** Certain adaptations were made for our immediate problem, and these may be pertinent to any person who is interested in propagating woody plants from cuttings. Cost was a very definite item. A hothouse arrangement was not feasible at the time, so we approached the problem as an interesting variation on techniques we had seen in use.

The materials used are very simple and readily available. The frame is a 3 by 6 foot affair, made of 1 by 12 inch cedar. This is sunk into the ground six to eight inches in an area which is quite well drained. The excavation is continued a couple of inches deeper, and the area is filled with a layer of sawdust to the lower edge of the frame. This allows efficient drainage as well as providing insulation for the propagating bed. The heat cable is placed on this surface.

A lid built on a 2-by-2-inch frame fits the structure beneath. Hardware cloth is tacked on with polyethylene sheeting used as a cover. The cloth serves both as a support and as a sort of water distribution system and rain maker when the box is in operation.

We use a 2½ watt heating cable, 40 feet long, as a source of bottom heat. This allows a heating pattern about six inches apart, and is adequate even though the outside temperature drops as low as 10 degrees F.°.

Coarse sand, or a combination of 1/3 part peat moss and 2/3 coarse sand is used as a rooting medium. A couple of handfuls of fritted trace elements are added to

* Dr. Zoet is a keen and observant amateur holly grower in Bellingham, Washington.

** Macmillan, New York (1955)

the mixture. Once the medium is in place and levelled, a fairly heavy layer of Captan is dusted on to keep the molds under control.

Since we have no running water, a gas drum has to serve. However, any leaky faucet would be an equally good source of water. (I am not conversant on the effects of chlorine in city water supplies.) A lawn soaker is an ideal distribution system within the box. Water is allowed to run at a fairly fast drip, roughly about 120 drops per minute at first, though 60 proves adequate later. The warm sand gives a good evaporating surface and the hardware cloth plus polyethylene top form a condensing surface so the cuttings are in a miniature climate of warm sand and a steady warm rain. This is the reason we insist on a flat lid rather than a traditional sloping one. With good drainage, there is no accumulation of water to encourage rotting. In general, this process is kept going for about 2½ months. After this, the water is shut off and the box is soaked via a sprinkling can once or twice a week.

Cuttings are taken mainly during October. Semi-hard growth from rapidly growing trees is ideal. Cuttings are three to five inches in length with all but 2 leaves ripped off and then wounded. As a rooting hormone we have used 2% IBA, though we know Hormodin No. 3 (0.8% IBA) and Rootone No. 10 also are effective. The last two are readily available commercially. The past year we used traces of boron, but this didn't make too much difference in the strike. The 3 by 6 foot frame accommodates about 1,000 holly cuttings.

The advantages of a home propagating box are many. 1. A more vigorous plant, already acclimated. 2. When plants are small, they stand the shock of transplanting much better. 3. Plants are not root bound. 4. The variety of plants available is infinitely greater than when you depend on commercial sources. 5. Plants are more available and more easily replaced while you are learning their growing habits under local conditions.

Specifically, with hollies, we are interested in: 1. Varieties best adapted to our local climate and soil conditions. 2. An inexpensive source for expanding our own planting. 3. Keeping our own losses at a minimum. 4. Developing varieties which could be used as potted berried plants at Christmas time, about 20-24 inches tall. 5. A means of propagating plants that have unusual characteristics which may be desirable.

Not the least reward is to become better acquainted with old Mother Nature and her vagaries. This is both a humbling and a delightful experience.

Holly in Washington

GEORGE W. EADE*

One of the most important horticultural specialty crops in western Washington is Christmas Holly. It is estimated that commercial holly growers harvest and ship approximately 400,000 lbs. of holly greens for the

Christmas season, produced on approximately 500 acres. However, an addition 250 acres will be in production in about 7 years.** In addition to the commercial plantings some holly is obtained from trees and hedges used ornamentally in home plantings.

The species used for the production of Christmas sprays and wreaths is English holly (*Ilex Aquifolium*). This group includes a number of varieties and some variegated forms. Because of its attractiveness the silver variegated type usually brings a higher price per pound, even though berries are generally fewer than on the green forms.

English holly does well in areas where the summers are cool, the winters mild and where the humidity is relatively high. Most of our western low valley areas and particularly the Puget Sound region has nearly ideal climatic conditions for the production of English holly.

Sites selected for holly growing should be protected from strong, drying winds; the preferable soil is a deep, fertile, well-drained orchard type for best growth and production. However, holly will grow on a wide range of soil types of high and low fertility. A commercial planting should not be attempted on marginal tree land as growth will be slower and production of quality cut holly will be limited.

Insects injurious to holly are holly bud moth, holly leaf miner, scale insects and aphids. Information about these pests and their control can be obtained from Mimeograph Circular No. 98; Western Washington Experiment Station, Puyallup, Washington. Title of this circular is *Holly Insects and Suggestions for Their Control*, by E. P. Breakey, Associate Entomologist.

Lillys of Holly Acres Will Own Ashumet Farm

Mr. and Mrs. Josiah K. Lilly 3rd of Holly Acres have agreed to purchase 63 acres of the late Wilfrid Wheeler's Ashumet farm, one of the larger Falmouth real estate transactions of recent years. G. Campbell Lawrence was broker.

This amalgamation will bring under Lilly ownership approximately 75 acres of holly cultivation, 25 at Holly Acres and 50 at Ashumet farm. In the combined holding, Falmouth will have one of the largest holly propagation businesses in the country.

The Lilly purchase is bounded by County road, Ashumet pond, the Falmouth-Mashpee line and Ashumet road. It includes two ponds, Flashy pond with 7.6 acres, and a smaller one unnamed on the maps.

* Chief Nursery Inspector, Washington State Dept. of Agriculture.

** Data on production and acreage supplied through courtesy of Mr. E. D. Mann, Washington Holly Growers.

Within these bounds, but excluded from the sale are the old farmhouse with 200 feet on Flashy pond and 19 acres around it, in which Mrs. Wheeler will continue to live, a camp maintained by Richard P. Wheeler on Ashumet pond and one maintained by C. E. Lillie.

Some 300 acres remain in the Wheeler estate.

Included in the sale to the Lillys are barns, a greenhouse and a dwelling.

As far as names go, there will be no immediate amalgamation. Ashumet farm will continue to be known as that. John R. Martin, manager at Holly Acres, will have charge of cultivation at both places. Joseph L. Dias will remain head gardener at Ashumet, a position he has held more than 30 years.

TO PRESERVE BEAUTIES

One of the terms of the sale is that the new owners will not violate the many handsome old holly specimens, heritages from Wilfrid Wheeler. Mr. Lilly lays particular stress on this. The natural beauties will be preserved. The grounds will remain open to visitors, by arrangement.

Wilfrid Wheeler came to Falmouth as manager of Coonamessett ranch and, in 1924, bought large Hatchville acreage, including the old Fuller homestead. A horticulturist and conservationist who became the commonwealth's first commissioner of agriculture, he took advantage of holly's affinity for Cape Cod soil and climate. Through the years he developed and named 21 new species. The countless beautiful holly trees distributed from Ashumet remained as his memorial when he died in December.

Josiah K. Lilly 3d, whose parents for many years had a summer home, Red Oaks, in Quissett, became a year around resident of Falmouth when he purchased land in Saconesset Hills and built an imposing home there into which he moved his family in January, 1959.

He and Mrs. Lilly bought the 80 acres which became Holly Acres from Wilfrid Wheeler, Jr. in December, 1953. It is separated by about a mile from Ashumet farm, fronts on Route 151 and Old Barnstable road and runs to the Falmouth-Mashpee line.

On Holly Acres, the Lillys have propagated the Wheeler varieties of holly and a few English hollies of the Whitney varieties.

Holly Arrangement Transparencies

Arrangements have been completed to process the transparencies of the holly arrangements presented by Mrs. Claude Dance at the meeting in Williamsburg, Virginia. A selection of ten Kodacolor transparencies taken by Mr. Billy Davis, Director of Photography, Louisville *Courier-Journal* and processed by Kodak showing Mrs. Dance's craftsmanship in vivid detail are available for gifts, presentation to clubs, and use in arrangement classes. The colors and artistry of each piece is worthy of viewing many times. A set can be obtained from the secretary for \$3.00 postpaid.

Handbook of Broadleaved Evergreens

This 22nd special feature issue of *Plants and Garden* is truly one of the "World's best illustrated garden and horticultural handbooks." Of the 21 articles contained in this edition, 2 are written specifically on holly culture and several of the remainder treat holly along with other broadleaved evergreens. The holly articles are by Robert B. Clark and Kathleen K. Meserve, both well known members of the Holly Society of America.

Other articles by Paul R. Bosley, Brian O'Mulligan, John C. Wister, Francis de Vos, all members of the Holly Society, treat a wide selection of broad leaved evergreens in a most informative fashion. Throughout the handbook the illustrations compliment the authors' work.

The handbook may be purchased directly from the Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn 25, New York, for \$1.00 postpaid.

The inclosed reprints of the Proceedings of the American Society of Horticultural Science contain reports by C. W. Dunham and D.V. Tatnall. This work was supported by a grant from the Holly Research fund.