

THE BLOEDEL RESERVE

Summer/Fall 1997

Volume 9 Issue 1

FROM THE DIRECTOR

This issue of our Newsletter features a review of the evolution of our footbridge in the forest. Few projects in the Reserve contained the challenges faced by this one... challenges of site (sensitivity and access), philosophy (should it even be built?), and design (cost versus quality). While this documentation helps us respond to questions we routinely receive and provides us with a conveniently assembled record about this project, we hope it expands your understanding of how our features evolve. May that understanding make your visits here more meaningful and your enjoyment of them richer.

Richard A. Brown

TO BUILD A BRIDGE

Richard A. Brown, Executive Director

INTRODUCTION

It wasn't long in the master planning process that we initiated back in 1985 that we discovered the need to have a trail cross the low ravine located north and east of our Bird Marsh area. We spent months cataloging all the nice views, features and interesting places within the Reserve and the means to connect most of them together in order to create our proposed sequence of experiences. While this ravine area was a relatively pleasant space of quiet stream and mature native plants, for the pedestrian visitor it offered little in the way of new experiences. The foliage and land forms that would be seen were not unlike those one could see in many other spaces within the Reserve. But if we had a bridge across this space, then visitors would have a wholly new visual experience. A bridge would allow visitors to look down upon the understory vegetation and the stream from a level some 30 feet above these features. Nowhere else within the Reserve could one have such an experience.

But there were drawbacks to having a bridge even beyond the obvious one of cost. A bridge could be just one more man-made structure. On many occasions I had discussed with Mr. Bloedel the role of architecture within the Reserve. It was a given fact that our goal here was to feature the beauty of nature and not man made structures. Other issues we would have to resolve would deal with how we were to construct a bridge in this sensitive site without that construction damaging the very feature we wished to reveal.

PLANNING FOR A BRIDGE

Few projects come to mind that took so long to plan as this one. The first recorded notes that reference this project suggest planning for the project began late in 1986.

To put this project in relation to other events, it should be recalled that our Landscape Master Plan was developed between 1985 and 1986 and was adopted by our Trustees in May of 1986. Our Master Plan drawing dated February 20, 1986, shows a proposed bridge/trestle at this particular location. From early 1986 into 1990, other higher priority projects received our attention. These included relocation of the maintenance facilities, relocation of the old office building from the main entry gate area, construction of the present Gate House, remodel of the Visitor Center, construction of parking areas, construction and refinement of trails to name just a few. The Reserve



The Bronze Medallion

RAB

opened to the public in October 1988. It is safe to suggest that the concept of a bridge dates back to the earliest considerations for this particular area of the Reserve.

The biggest issue for this project was not so much developing a design for the bridge, but rather, a plan for how one (of any design) would be constructed. Access to the general site was very limited and the site itself was perceived to be very fragile. We relied upon our Landscape Architect, Geoff Rausch (Environmental Planning & Design, Pittsburgh, PA), to not only come up with a conceptual plan for a bridge, but details on how we could actually build it. A breakthrough seems to have occurred late in 1990.

DESIGNING A BRIDGE

Written early design notes about our bridge are scarce or non-existent. Much of what follows comes from my recollections and

our file of architectural plans and drawings.

As is often the case with our projects, we first develop accurate and detailed site maps of the general project location. In this instance, our surveyors prepared a map of the general region showing every tree that had a trunk diameter greater than six inches, every stump or rock or fallen log, as well as the topography of the land. Site drawings were prepared showing these features at a scale of one inch of drawing equaling ten feet of land. Topographic contour lines were plotted for every two feet of site elevation. With this site plan in hand, we determined exactly where the footings (ends) of the bridge would occur as well as its length. In this instance, we determined that our future bridge would have to weave through several trees. Removing trees to allow a straight bridge would be unacceptable.

Designs for a bridge begin to appear between 1989 and 1990. A major breakthrough was the

concept of utilizing a modular approach where a bridge would be built, by hand, section by section. Once the construction technique was defined all that remained was design of the actual appearance features. But even that effort took three drafts. All three versions would utilize the same understructure or support system; they would vary only in the railing and appearance details.

Design #1.

The first bridge design reflected an approach not unlike that used on many of our projects. This procedure involves integrating the full "wish list" of features and use of the finest materials. This might be called the "Rolls Royce" version. This design for our bridge proposed very finely crafted redwood railings. The Douglas fir poles supporting the entire structure would be uniformly tapered, consistent in size and serve to support the railings as well as bridge decking. Each pole (12-16 total) would appear to penetrate through the bridge deck, would extend above it to provide support for the railings and be topped with a carefully fitted copper cap. The railings would consist of a rounded top handrail of clear redwood. Just above and parallel to the bridge deck would be another redwood beam extending between the upright poles. Between these two redwood members would be painted vertical steel tubes creating the main safety barrier for the railings. An exceptional design effort was made to hide all of the devices needed to join the various shaped pieces of the railing together and to the bridge deck itself. If memory serves me at all, the preliminary estimate to build this bridge as designed was approximately \$300,000. It compared closely to the cost of our new Gate House.

Design #2

Believing that it was unreasonable to spend that much money on a landscape feature, in light of the

fact that such features were to be avoided altogether, we requested a "bare bones" version of a bridge. The primary objective for design #2 focused on cost. We asked our designer to propose a bridge that could be built for about \$100,000. The "quality pendulum" would now swing to the other extreme.

To achieve the budget limitations, design #2 involved the elimination of all the high quality redwood railings. In their place would go an anodized aluminum pipe-style top rail supporting a web of stainless steel wire cables that would fill the space between the deck and railing. Even with this bare-bones version of a railing system, the bridge cost still hovered just above \$100,000.

Design #3

At the spring 1991 meeting of Reserve Trustees, the two bridge design variants (with budgets) were thoroughly discussed. While there was a consensus that design #1 was excessive and too costly for further consideration, design #2 was felt to be wanting. Some Trustees expressed the view that it was just "too simple" and not reflective of the sense of quality that pervades other portions and aspects of the Reserve. Other Trustees expressed the view that since Mr. Bloedel could be considered as an important part of the history of the timber industry in the northwest, perhaps somewhere within the Reserve should be an example of contemporary wood technology. That suggestion stimulated an active discussion that, instead of straight railing elements mirroring the straight sections of the bridge deck, maybe this bridge should have gentle curves and curving wood railing components. Having made these suggestions, the Trustees approved construction of the bridge pending implementation of those improvements that were economically feasible within a budget of \$120,000.

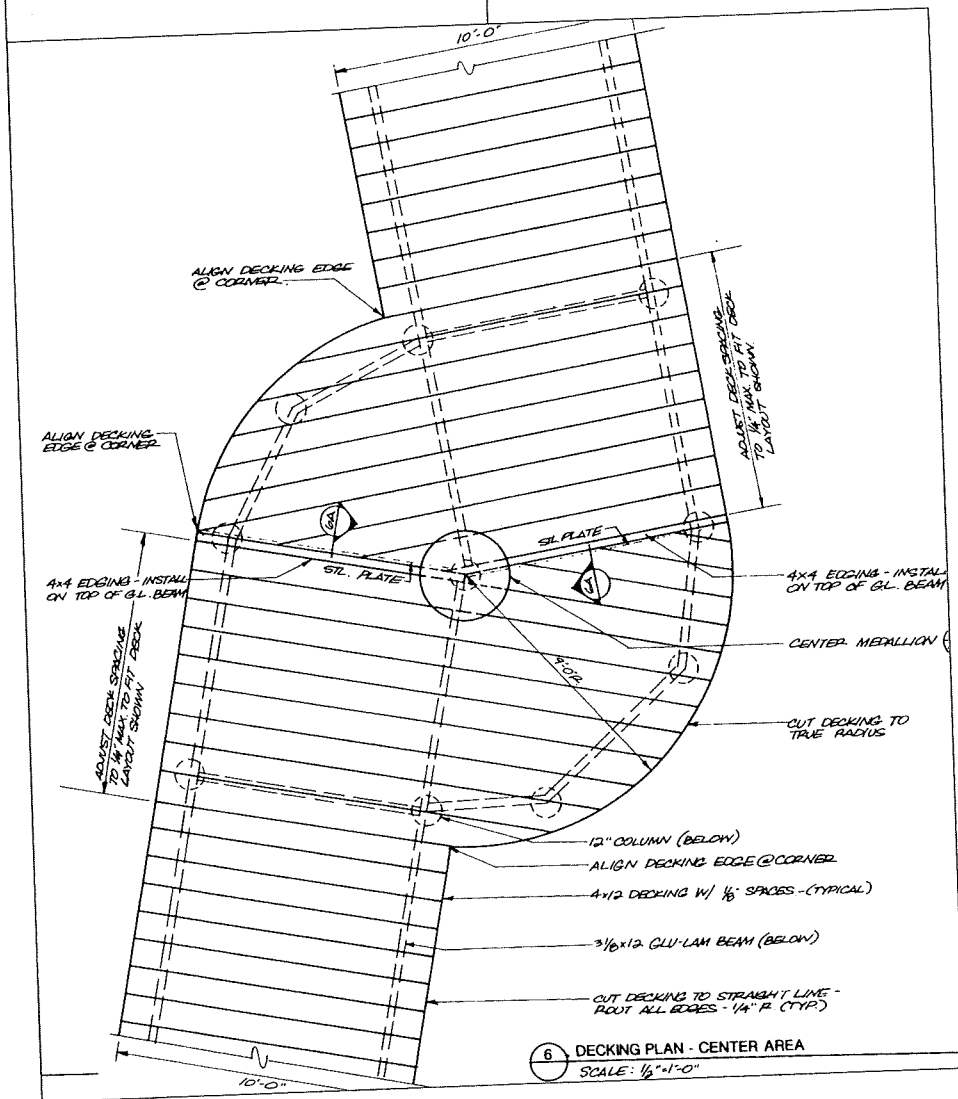
From this review, the final design of the bridge arose. The

three straight sections of deck illustrated in the first two designs would be replaced by two straight sections arising from a central circular hub. The railings would be made from glue-laminated wood and would appear as continuous ribbons — seamless and flowing. In the central hub portion of the bridge curved benches would be placed to allow visitors to sit and enjoy the pleasant vistas up and down the little valley. Design #3 emerged as a tasteful middle-ground design between a conservative, strictly functional bridge and a finely crafted piece of outdoor furniture.

The basic construction plan for all three designs suggested a modular approach. First, holes for the concrete footings would be dug

by hand, carefully so as not to disturb the stream or vegetation. After inspection of the base soil in these holes by an engineer, tubes would be installed to serve as forms for the concrete footings. Steel reinforcing rods would be placed within the tubes to strengthen the concrete. The concrete would be delivered to the forms via a long hose from a concrete pump truck.

The footings would then support treated Douglas fir poles (18 total). Each pair of poles would be braced together with beams at the top and near the bottom and 3/8" wire rope with turn-buckle adjusters would cross-connect pairs of poles. On the top end of the poles, parallel wood (glue laminated) beams would be placed running the course of the bridge.

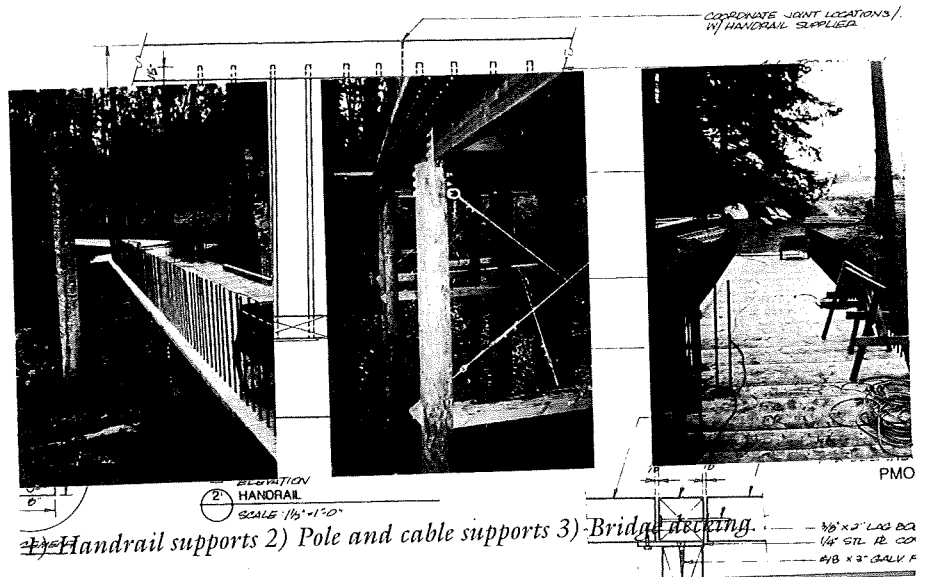


On these beams, the actual treated wood bridge decking (4 x 12" fir planks) would be installed. It was our preference that the visible surfaces of the bridge decking not show the knife incisions from the pressure treating process.

To support the wooden handrail, 8" square galvanized steel plates were made with two half-inch galvanized pipes welded to each plate. The pipes would be approximately 3.5 feet long each and be 5.68 inches apart. On both ends of each deck board of the bridge, holes would be drilled to permit the pipes to pass through that board and extend upward to support the railing. The steel plates would then be attached to the bottom of the deck boards by wood screws.

In the circular hub area of the bridge, orientation of the deck boards changed. In the center of that space, to cover the rather awkward union of these boards, we decided to have a bronze medallion made reflecting our logo. Mr. Robert Walker, of the John Burroughs School (St. Louis, MO), was contracted to create that medallion for \$4,000.

The final detail of our bridge was its railing. Redwood and cedar were considered as candidates, but were felt to be too soft and too easily marred. Teak would be a wood of choice, but we were concerned about its presence stimulating controversy over exploitation of tropical forest trees for our landscape enhancement. The wood we settled on was Jarrah (*Eucalyptus marginata*) — a timber species commonly cultivated in western Australia. Jarrah has a long history of domestic use for pilings, road timbers and garden furniture as well as for marine applications. It is hard, oily and very rot and pest resistant — perfect qualities for outdoor use. The firm of Spurwink Spiral Stairs (Portland, ME) was identified as a company capable of creating the curving, laminated railings specified within our bridge plans.



CONSTRUCTING A BRIDGE

With all the plans prepared and the construction procedures clarified, all that remained was to select a contractor and commence construction. The firm of Derek Arndt Construction (Kirkland WA) was selected through a competitive bidding process and a contract was signed August 26, 1991. The contract (\$102,589) did not include acquisition of the \$4,000 bronze medallion. Nor did that contract include the construction of the stone walls installed at the south end of the bridge. For that project, we contracted Jerry's Masonry (Kingston WA) in mid-1992 to build the two walls designed by Geoff Rausch. Total cost for the stone walls was \$10,584.

Construction of the bridge was uneventful and progressed faster than we anticipated. But it was not without problems. The first problem that appeared was delivery of all the bridge decking lumber showing the incisions from the pressure treating process on all plank surfaces. This was in contradiction to the specifications that one surface be left unscored. While we felt we could justifiably reject all of this lumber in favor of new, properly processed wood, we allowed the contractor to merely re-surface each

plank to remove these small blemishes.

Barely was the bridge complete when we began to notice problems occurring with the Jarrah benches. Joints were coming apart and it looked as though they might literally fall to pieces. We immediately contracted the supplier, Spurwink Spiral Stairs and sent photographs showing the failures. While we negotiated a replacement for the benches, we began to also notice flaws appearing in the railings. The flaws consisted of the laminations separating into cracks. Numerous letters were written and phone calls were made to ascertain the cause of these problems and their remedy.

The contractor contended the failings in the railings were due to our resistance to apply protective coatings (finishes) to the railing wood. We contended such treatment was unnecessary and would prevent our railings from weathering to a pleasant silver-gray color. To provide an expert opinion on this matter, I phoned an expert on Jarrah wood at the Department of Agriculture in Australia. His remarks suggested to me that we were correct, that the natural qualities of the wood made coating unnecessary. He further explained, however, that the oily properties of the wood made the glue lamination process a

tricky one. If the contractor was unfamiliar with these properties, laminations would not be successful. We came to the conclusion that our fabricator had never worked with Jarrah and consequently failed to sustain the required precise conditions of surface preparation, moisture content, temperature, and gluing pressure. Where those conditions were not achieved, gluing failed. We were at an impasse and time was slipping away. To further provide counsel to us, we arranged to have Mr. Darrell Braun (Los Angeles CA) come and see our Jarrah application and problems. Mr. Braun has successfully used Jarrah for construction of garden furniture for many years. He was very familiar with the wood and the problems associated with processing it. Mr. Braun inspected our project and reported that our application was a perfect case for use of Jarrah, but that preparation of the wood was inconsistent. About the time we had assembled all of our findings, which tended to indicate wood processing failures by the fabricator, the supplier (Spurwink) went out of business.

The only recourse we had was to repair the cracks ourselves and to get on with other projects. To reduce further instances of lamination failures, we elected to apply, about once per year, teak oil to the railing. This application has prevented the wood from weathering to a pleasant color, on-the-other-hand, we haven't witnessed further wood failures. In an effort to also reduce stresses on the railing, we decided to cut the railing into long sections to permit expansion and contraction of the wood to occur.

The bridge has become an important component of our circulation plan. It allows unique views of a wonderful yet fragile area of The Reserve. Its simple yet tasteful design augments the entire visit experience without overwhelming it. As always, we invite your reaction and opinions.



NEWS FROM THE GARDEN

Maintaining the Japanese Garden

Robert W. Braid, Horticulturist

Over the past nine years many questions have been asked regarding the maintenance of the Japanese Garden. This article is an attempt to answer some of those questions. It should be noted that Mr. Bloedel expressed many times his preference that our Japanese Garden not attempt to be a true (stereotypic) Japanese Garden...he often used the word "Japanesque" to describe ours...he always admired the use of the four basic elements of a Japanese Garden: space, stone, water and plantings. Perhaps the best way to understand what a Japanese garden is, is to understand what it is not. It is not simply a collection of oddly shaped rocks and twisted trees set off by water features. Neither is it composed of flower beds and formal plantings with the familiar geometry and symmetry of classical European design, nor does it have the romantic imitations of nature conceived by English landscape design. Japanese gardens neither copy nature nor totally rearrange it. Instead, they chart a subtler course that lies somewhere in between. From the natural landscape, a Japanese garden selects and distills just those particular elements designed to symbolize and suggest, to conceal and reveal. In effect, the garden paints a partial picture to which observers make their own contributions. Drawn into the picture, one discovers ideas and relationships in the colors, lines and form. Viewers then complete the scene in their mind's eye, to their own satisfaction and delight.

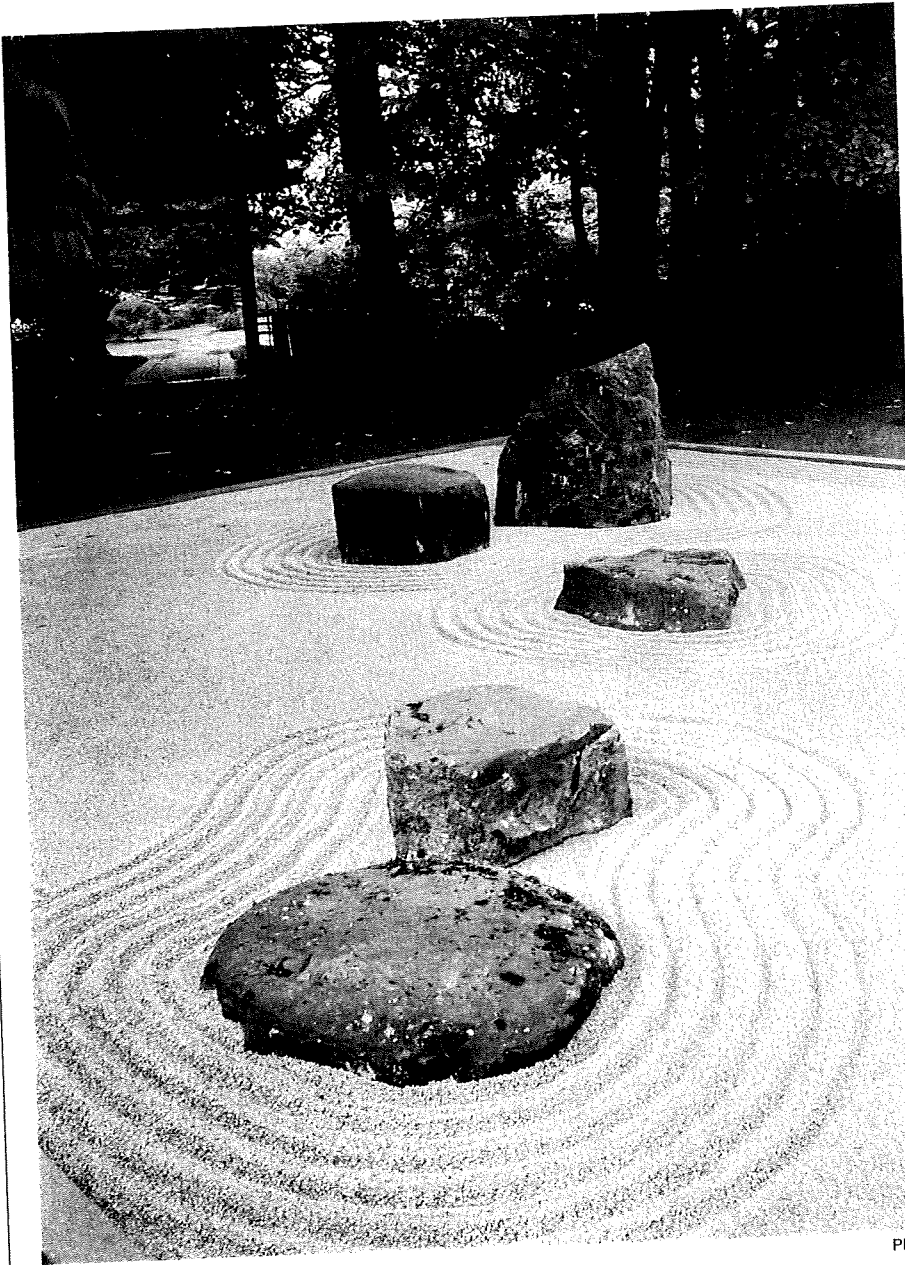
One of the most popular features is the stone garden. Installed in 1987, the stone garden

requires at least weekly (often daily) grooming with a wooden rake and large squeegee. The feature itself is known as a dry landscape. Since rocks give stability as well as drama to a garden, it is essential that they have ample visual weight and are seen to be firmly rooted to the ground. The large flat area is blanketed with a finer stone material to keep the ground dry and neat and to serve as a background that unifies the design. In our stone garden, crushed granite is used to reduce unpleasant glare and the soft off-white/light gray color provides a neutral background for the darker hues of rocks and plants. The raked pattern suggests water in this dry landscape. Often, the raking is done walking backwards around the rocks to erase footprints as you go. Stepping from raked area to raked area, the flat smooth surface is not disturbed. The use of the squeegee removes from the large flat areas any imprints such as hoof prints from deer or footprints from children or adults.

Maintenance of a Japanese garden is very dependent on the seasons and not on a calendar year. The most intense chore is, of course, the weeding. With weeds

Shika odoshi (deer scare)





PMO

Carefully raked pattern in the Stone Garden

you have both spring and fall germination of seeds. Therefore, April through September is the most busy time for this chore. Student interns are hired for this particular task not only in the Japanese Garden but throughout the entire Reserve. The more visible areas, such as the entrance, rock garden, guest House and the beds along the pathways and around the pond, have the highest priority. We move next to the less

visible areas in the garden and eventually, the person or persons weeding end up back where they started only to do it all over again. Some consider this task as job security since it is highly unlikely that the weeds will ever give up.

Once established, the plants in a Japanese garden will require much the same maintenance that they do in any other garden area, only here the accent is on permanence. Japanese plants should be kept in

scale, therefore the main chore is the pruning. Pruning not only keeps the plants neat and well-proportioned, but brings out their inherent beauty by emphasizing the character of a particular plant to reveal the grace of its branches silhouetted against the sky or dipping toward the surface of a pond. Pruning sculpts the plant to suit the garden's overall design. Of all the plants in a Japanese garden, the most basic are the evergreens; along with rocks and water, they provide the garden's framework. The two main species in the Japanese garden are the Japanese black pine (*Pinus thunbergiana*) whose characteristics give it a rugged masculine appearance and the Japanese red pine (*Pinus densiflora*) which is considered a feminine tree. It is often used as a foil to the black pine's masculinity. To prune a pine tree in the Japanese style, we remove all weak or unwanted branches, spacing the branches to keep one from shading another directly below it. Branches that need shaping or slowed growth, can be anchored parallel to the ground or to other branches by using heavy gauge fishing line and clear tubing to prevent damage to the bark. Each spring, when the candles of new growth are about five inches long, we snap off the top half of each vertical candle and the top third of each horizontal one; we remove all that point downward. To keep the pine looking as if it were carrying clouds of needles, we repeat the candle pruning every spring, removing any branchlets that crowd a branch or grow too rapidly. We always keep the desired shape in mind as we prune. In regard to the ornamental plum, in the spring we prune each branch and shape the branches into uneven and more naturalistic mounds. We maintain the shape of the tree by removing any suckers that sprout from the base of the tree or from branches, cutting back the runaway vertical shoots so they are a half inch below the oval outline of the mound.

Other maintenance chores throughout the year are seasonal. A fall task finds us using backpack blowers and rakes to remove all leaves on the moss areas. Removing the leaves helps the moss to remain healthy by letting in light and water which the leaves would block if allowed to build up. The removal of broken branches and twigs is more for appearances to keep the area looking neat and tidy. During the winter, snow removal is a major factor for the health of the evergreens, since the weight of the snow has a tendency to break the branches. Another seasonal chore is keeping the water features maintained by cleaning leaves and debris from the streams and controlling the flow of water into the shika odoshi, or deer scare, which is a bamboo pipe that pivots seesaw-fashion over a support. One end rests on a stone; the other is a reservoir that slowly fills with water until the weight of the liquid forces the pipe to tilt, spilling its contents. Once empty, the shika odoshi springs back to its original position, producing a hollow thump as it strikes the rock. It is amazing how many people like to play with this feature throughout the course of a day.

It has been said some years ago by Richard Brown, Executive Director of the Reserve:

...that we've tried to create a feature that reflects an adaption of a Japanese Garden. Our feature exhibits some of the best qualities of this type of garden, modified by western motives. It is important for those that may be involved in future changes of this space, that it not become the stereotypic Japanese garden. We should treat the plantings with care and taste, that they may continue to appear natural not overly manipulated. There is a challenge here, as there is throughout the Reserve, to manage with taste and subtlety and never by overpowering the elements.

These are our goals as we maintain this garden space, season to season, year in and year out.

Where Do All Those Flowers Come From?

Jan Long, Florist

Gardening and flower arranging can become a kind of disease. It infects you; you cannot escape it. While driving, visiting or just reading, your eye and mind are always thinking of ways to use what you happen upon.

In the last several years, we have developed a cutting garden at the Reserve which supplies much of the plant material used in our arrangements. Because of the considerable maintenance needed for such a garden, we considered discontinuing the effort and buying flowers instead. This spring, I checked on prices with several local growers and a Seattle wholesaler and prepared a report.

After a crew and garden staff meeting, we decided to continue with the cutting garden. The garden will be relocated this fall. It will be planted in rows to make it easier to care for. The addition of Aaron Whitney as a helper on Tuesdays has been wonderful! Other student interns have helped with maintenance as needed too.

Greens and other background

or base materials are collected on the grounds or from my woods and garden. I also bring in flowers from my own garden and anywhere I find something interesting to use.

Most plants and flowers hold up better in warm or very warm water. Best time to cut flowers or greens is early morning or late afternoon. Place cut materials in warm water and let sit overnight or several hours in a cool place before using.

Christmas will be here before we know it...and I could use more of the rose, pink hydrangeas. You can call me here at the Reserve on Tuesday, Friday or Saturday.

Thank you all your compliments. They are most appreciated.

Oh, what a wondrous job have I!

Irrigation improvement, Turf Renovation, Disease Control

Joe Picuch, Crew Superintendent

Work was recently completed on an 8000 square foot area of turf near the Mid-Pond and surrounding the Himalayan Fir. Long standing drainage problems have

Jan Long with her flowers.



adversely affected the appearance and health of the lawn and the fir. One hundred and twenty yards of sandy loam were brought into raise the grade as much as twelve inches, and the slope was reconfigured to drain more effectively. All the irrigation heads were replaced to improve coverage and to stop water loss from leakage. While the tree will be slow to show improvement, the turf should look great this fall.

Disease

Dead and dying conifer trees were removed from the forest near the Bird Marsh during August. Sixteen diseased trees were cut down and burned to slow the spread of the *Armillaria* fungus infecting them. The staff is researching the possibility of inoculating the stumps with an Oyster Mushroom Mycelium adapted to growth on conifers to prevent further spread of the *Armillaria*.

PROGRAM ACTIVITY

Bitsy Ostenson, Program Coordinator

Swans

Swan year 1997, was an interesting one. The saga began about April 9, when the Tundra swans (*Cygnus columbianus*) were missing from the mid pond area. A bit of searching found them back at the Bird Marsh obviously of the opinion that life was better there.

From the point of view of our Trumpeter Swans (*Cygnus buccinator*), the new arrivals had entered territory already under claim. No fights occurred, but since it was very nearly time for the Trumpeters to begin a family, the crew quickly herded the interlopers back to the Mid Pond area. That turned out to be a temporary solution and on April 26, the wanderers were once again herded back to the central garden and this time a fence was placed around the entire Swan Pond. Thus the birds were contained but had plenty of room to swim.

Meanwhile, back at the Bird Marsh, the Trumpeters did begin a family. May 1, the Pen settled onto the nest and on June 6, a visitor reported seeing a cygnet peeking out at its new world. By Sunday, June 8, seven cygnets were seen swimming with their parents.

At the suggestion of Martha Jordan of the Trumpeter Swan Society, our birds had been fed a much-supplemented diet all winter and spring. The results were evident in the increased thickness of the shells on the eggs, the size of the cygnets, their coordination and general robustness. The birds were flown to Iowa on June 19, and have joined the Iowa Program to repopulate the mid-west flyway.

Sad as it is to see our birds leave, we know that their only chance at a life of free flight and migration is to join a flock. We wish them well, every one.



FAB

Purchase a \$35 per year annual pass to the Bloedel Reserve and receive the following membership benefits:

- Periodic Newsletters
- Notification of events
- 10% off *The Bloedel Reserve: Gardens in the Forest*
- 10% off *The Bloedel Reserve Video*
- Unlimited visits to the Reserve with up to three guests; reservations necessary.

Hours: Business: 9-5 Mon-Fri
 Visitor: 10-4 Wed-Sun
 Fees: General Admission \$6
 Seniors \$4
 Children 5-12 \$4
 Children under 5 free

Reservations: (206) 842-7631 V/TTY

The Arbor Fund
 7571 NE Dolphin Drive
 Bainbridge Island, Wa. 98110-1097

Non Profit Org.
 U.S. Postage
 Paid
 Bainbridge Island,
 WA
 Permit No. 17031

Produced by the Bloedel Reserve which is managed by The Arbor Fund, a non-profit Washington corporation. © 1997 by The Arbor Fund