STORM WARNING:
Damage to Trees May Result

Heavy damage to valuable trees may result from heavy snows expected to arrive soon. Homeowners are advised to check —
1. Overgrown branches need corrective pruning.
2. Remove excessive sucker growth.
3. Protect weak spots with cables.

.Select your large field grown Shade Tree

NOW for '64 delivery in a ball of earth and burlapped
A small deposit will hold tree until planting time

Shademaster Locust
Skyline Locust
Sunburst Locust
Soft Maple
Hickory
American Linden
Little Leaf Linden
Green Ash
Redbud
Crab
Dolgo Crab

ALAMEDA NURSERY
Denver's Garden Center
3160 South Zuni St.
ENGLEWOOD
SIX BLOCKS EAST OF LORETTO HEIGHTS COLLEGE ON DARTMOUTH

THE COVER
The fruit of the American plane tree or sycamore (Platanus occidentalis) as seen in the winter. Photograph courtesy of Charles J. Ott.
THE GREEN THUMB Editorial Committee will miss the ability of Julia Andrews, who has recently married and left Denver to live in Sierra Leone, West Africa. She and her new husband, British-born Antony Jones, were married in Fort Collins, Julia's home town, on November 9. Their names are now Mr. and Mrs. Antony Andrews-Jones. Soon after the wedding they left Colorado to spend some time in England before arriving at their home in Freetown, Sierra Leone, in time for Christmas. They met while he was studying at the Colorado School of Mines, on leave from the Sierra Leone Government, where he has a permanent position as geo-chemist. They hope to make periodic visits to Colorado, the first to be in the early summer of 1965.

Julia, a graduate of the Department of Landscape Architecture at Iowa State University and a member of the American Society of Landscape Architects, was associated for several years as a partner in the firm of Jane Silverstein Ries and Julia H. Andrews, in the practice of landscape architecture. She gave freely of her enthusiasm, time and energy to many projects of the Rocky Mountain Chapter of the American Society of Landscape Architects and to the Denver Botanic Gardens, especially the Editorial Committee of The Green Thumb.

We all miss her and our very best wishes go out to her and her husband as they start their new life. We hope to have the pleasure of seeing them when they visit here in 1965.

THE LIBRARY is the backbone of any institution, such as Denver Botanic Gardens, where research and education for public benefit are the prime functions.” This statement, made by Dr. A. C. Hildreth, Director, applies especially to the Helen K. Fowler Library at Botanic Gardens House. We are proud of this library, for it is a mainstay to the members of the staff in giving bona fide information in answer to the many horticultural questions they must answer; it provides a wealth of material for the articles written on horticultural and botanical subjects; it offers a realm of knowledge to the gardener, the nurseryman, the arborist, the landscape designer (professional and amateur) and to anyone who is interested in nature's amazing cycle of plant life.

This library must be used and the books widely circulated in order to fulfill its purpose. We realize that the weekday hours it has been open in the past make it impossible for many people to use it who would like to do so. With the feeling, therefore, that we are responding to a necessity, it is our pleasure to announce new Saturday hours for library use: after January 1, 1964, it will be open from 10:00 a.m. until 3:00 p.m. Visitors will be welcomed and assisted by our new volunteer librarian, Miss Lucy M. Crissey, who comes to us from Columbia University Library School, well-qualified to be of help to our members and friends. Access to the library will be from the front terrace of the Botanic Gardens House at 909 York Street. Members, as always, may check out books for a period of three weeks and everyone, whether a member or not, is invited to come in, read and browse in the hospitable atmosphere. A telephone has been installed so that information about our books may be obtained if a visit is impossible. The telephone numbers are 297-2428 and 297-2632.

This is our invitation to you — make use of this wonderful library. There is no charge for the service and there is a wealth of information available for the seeking on many subjects: trees, wildflowers, perennials, annuals, shrubs, landscape architecture, house plants, flower arranging, bonsai, individual plants such as roses, orchids, African violets and others too numerous to mention. You must browse to learn. There is also a pamphlet file containing valuable papers on specific phases of botany and horticulture, and publications from other botanical gardens and arboreta are available for perusal in the library.

It is significant to state here that we would be unable to offer this new and extended service were it not for the devoted efforts of Mrs. Arthur Hellriegel, the generosity of Mrs. Alexander Barbour and the timely arrival of Miss Crissey. Mrs. Hellriegel, whom many
of you know, has for five years worked as a volunteer in the library, rearranging the books in order to incorporate many new acquisitions obtained through gifts and purchases. She has, at the same time, performed all of the other tasks of the trained librarian, without which service we would have been at a great loss. She is a graduate of the University of Denver School of Librarianship and worked for the Denver Public Library in various departments, including Science and Engineering for eight years. After spending four years in the Wichita City Library as a Librarian in the Reference and Government Documents Departments, she had a 15 year affiliation with Lowry Air Force Base as Base Librarian. The wealth of knowledge accumulated during these interesting years has been her gift to us — its value is inestimable.

The Library Committee, carrying out a revamping program devised by the late Chairman, Mr. Fred Johnson, assisted Mrs. Hellriegel in updating the library and making it more functional. We are fortunate, too, to have secured the volunteer assistance of Miss Crissey, whose background in the field of library work is very impressive. Miss Crissey received her A.B. degree from Mount Holyoke College and her B.S. degree from Columbia University's School of Library Service. For six years she was associated with the New York Public Library as an assistant branch librarian and secretary of the Training Class. The next 33 years were spent as Assistant to the Dean of the School of Library Science, Columbia University. In this position she was responsible at different times for admission, student counseling and placement, plus secondary administrative duties at all times. Related activities in which Miss Crissey has participated include: member of the Council that published Who's Who in Library Service, 3rd edition, committee membership, chiefly in recruiting activities, in the American Library Association, The New York Library Club, The New York Library Association and The Association of American Library Schools. Miss Crissey also served two terms as Secretary of the New York Library Club.

Miss Crissey's fine background will, we are certain, add immeasurably to the usefulness of our library. We sincerely hope that you who are reading this will be as pleased with the innovation as we are and that you will take advantage of it. We all know that there are going to be some cold, dreary, winter days ahead when the old green thumb will have to be pampered. Brighten those days and refresh your mind with a good book on a good subject — it will help to enrich your enjoyment of nature in the future.

Plant Perennials!

BERNICE LUCAS PETERSEN

In this age of satellites and space-ships the contemporary gardener might cultivate only sweet rockets, mignonflowers, sunflowers and shooting stars. Whether your space garden encompasses two city lots or a small acreage, a well-planned perennial border orbiting on your garden axis is a must.

Assuming earth-bound gardeners will remain active for a few more enjoyable years, suggestions for planning a perennial border in your garden space are appropriate. “A few enjoyable years” is the phrase that clinches the planting of perennials. Some, such as peony, gas plant, lupine and Christmas rose are cherished for their endurance and resent being disturbed at all. Most perennials, however, should be divided every three years and aggressive varieties of chrysanthemums, hardy asters, day lilies and iris require even annual division.

When choosing plants for a given location, remember a sunny border requires a different series of plants than a shady one. Consider whether your background is a brick wall, sapling fence or the ideal dense planting of trees, shrubs or evergreens. Consider, too, the foreground. Is it a plush expanse of greensward or a bare driveway? Duration and intensity of sunlight have a definite bearing on plant suitability, amount of bloom and degree of color trueness.

After you have defined your perennial border in location and shape draw the border to scale on paper; two feet to the inch is satisfactory. In this planning stage most flower-happy individuals anticipate how many kinds of plants they can accommodate in their border rather than how few. Restraint is the key. Big, bold masses of a few flowers add zest to any border. Unless the plant...
will want to grow an untried plant in a test area. If space is limited but your visions unlimited, try it now!

Unless your scheme involves merely one or two colors, the only limitations are avoiding strange contrasts such as scarlet-red with blue-purple. Many authorities use white as a peacemaker between colors to subdue them. Others insist white is an intensifier to be used as a separator or to arrest attention. The interpretation is yours. At any rate, greys and low-valued greens tend to harmonize hues and whites are pleasing both in the evening garden and cool, shaded garden.

Even in space gardens, plantings are not fashionable in circles, crescents or stars. 'Drifting and Dreaming' is the theme. Let the dainty Virginia bluebells drift into bays of garden pinks and bleeding hearts; let 'Africa' phlox drift into groups of Shasta daisies. Are you dreaming? Then let's head back to the border. Drifts should be rather long and narrow with tall perennials flowering in the medium and even lower-growing bays to hide fading blossoms and foliage. With the disappearance of chiming bells or leopard bane in the spring let annual petunias take over. Balloon flowers, Shasta daisies or tall snapdragons will cover faded poppy foliage. Repetition of drifts or large single specimens at regular intervals lends accent, unity and strength to a good border.

If you like, start planning at the back of the border. Include flowering shrubs for tall bloom in spring followed by delphinium, tall meadow rue, false indigo and hardy aster. Peonies, phlox, lilies, some day lilies and floribunda roses are among the many medium-height plants for the middle portion.

Put the edge on the border with plants of good enduring foliage. Coral bell, low veronica, perennial candytuft, hardy pink, blue fescue, all fulfill this requirement. If you prefer continued color, supplement perennials with such annuals as alyssum, dwarf marigold, ageratum or verbena.

Are you ready for the test trial? Some warm winter day hie yourself to the planting area using markers to indicate each plant name and variety in its proper space. Not only can you visualize the appropriateness of your plan, but with these stakes you will facilitate the actual planting on countdown day in mid-April.

3 - 2 - 1 - zero!
May 15: "Blast-off almost perfect?"
"Roger, the plants are growing. The garden's under way."

**PERENNIALS**

<table>
<thead>
<tr>
<th>Scientific and Common Names</th>
<th>Height</th>
<th>Color</th>
<th>Time of Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Achillea millefolium</em> (common yarrow)</td>
<td>X</td>
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<tr>
<td><em>Achillea psannica</em> (sneezewort yarrow)</td>
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<tr>
<td><em>Aconitum carmichaelii</em> (monkshood)</td>
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<tr>
<td><em>Althaea officinalis</em> (marshmallow)</td>
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<td><em>Althea rosea</em> (hollyhock)</td>
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<tr>
<td><em>Alumtrium salicolaceum</em> (basket-of-gold)</td>
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<tr>
<td><em>Anchusa azurea</em> (Italian bugloss)</td>
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<tr>
<td><em>Anemone hupehensis</em> (anemone)</td>
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<td><em>Anthemis tinctoria</em> (hardy Marguerite)</td>
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<tr>
<td><em>Aquilegia caerulea</em> (Colorado columbine)</td>
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<tr>
<td><em>Aquilegia hybrida</em> (hybrid columbine)</td>
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<td><em>Arabis caucasica</em> (Caucasian rock cress)</td>
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<td><em>Artemisia lactiflora</em> (wormwood)</td>
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<td><em>Artemisia abularia</em> (silver king wormwood)</td>
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<tr>
<td><em>Asclepias tuberosa</em> (butterfly milkweed)</td>
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<tr>
<td><em>Asper spp.</em> (Michaelmas daisy)</td>
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<tr>
<td><em>Baptisia australis</em> (blue false indigo)</td>
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<tr>
<td><em>Belamcanda chinensis</em> (blackberry lily)</td>
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<tr>
<td><em>Bellis perennis</em> (English daisy)</td>
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<tr>
<td><em>Boltonia latifolia</em> (violet boltonia)</td>
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</table>

*This table of perennial plants was adapted from a list prepared by the late M. Walter Pesman which was used as a class reference for planning perennial borders at the University of Colorado Extension Center.*
<table>
<thead>
<tr>
<th>Scientific and Common Names</th>
<th>Height</th>
<th>Color</th>
<th>Time of Bloom</th>
<th>Good cut flowers</th>
<th>Stake shade</th>
<th>Very useful</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Campanula carpatica</em> (Carpathian bellflower)</td>
<td>x x</td>
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<td><em>Centaurea cyanus</em> (hardy cornflower)</td>
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<tr>
<td><em>Cerastium tomentosum</em> (snow-in-summer)</td>
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<td><em>Ceratostigma plumbaginoides</em> (plumbago)</td>
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<tr>
<td><em>Chrysanthemum</em> spp. (chrysanthemum)</td>
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<td><em>Chrysanthemum coccineum</em> (pyrethrum)</td>
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<td><em>Chrysanthemum maximum</em> (Shasta daisy)</td>
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<td><em>Clematis herselfeifolia davidiana</em> (fragrant tube clematis)</td>
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<td><em>Clematis recta</em> (ground clematis)</td>
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<tr>
<td><em>Coreopsis grandiflora</em> (big-flower tickseed)</td>
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<tr>
<td><em>Delphinium elatum</em> (bee larkspur)</td>
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<tr>
<td><em>Delphinium grandiflorum</em> (Siberian larkspur)</td>
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<tr>
<td><em>Dianthus barbatus</em> (sweet William)</td>
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<tr>
<td><em>Dianthus spectabilis</em> (common foxglove)</td>
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<tr>
<td><em>Digitalis purpurea</em> (common foxglove)</td>
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<tr>
<td><em>Doronicum caucasicum</em> (Caucasian leopard bane)</td>
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<td><em>Echinops exaltatus</em> (Russian globe thistle)</td>
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<td><em>Eremurus robustus</em> (foxtail lily)</td>
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<tr>
<td><em>Erigeron aurantiacus</em> (daisy)</td>
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<tr>
<td><em>Eryngium maritimum</em> (sea holly)</td>
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<tr>
<td><em>Eupatorium rugosum</em> (hardy ageratum)</td>
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<tr>
<td><em>Euphorbia epithymoides</em> (cushion spurge)</td>
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<td><em>Ferns, various</em></td>
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<tr>
<td><em>Gaillardia aristata</em> (blanket flower)</td>
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<tr>
<td><em>Geranium grandiflorum</em> (lilac crane’s-bill)</td>
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<td><em>Gloxinia</em> spp. (peony)</td>
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<td><em>Gypsophila elegans</em> (Ozark evening primrose)</td>
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<td><em>Helenium autumnale</em> (common sneezeweed)</td>
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<td><em>Helianthemum nummularium</em> (rockrose)</td>
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<td><em>Helianthus decapetalus</em> (thin-leaf sunflower)</td>
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<td><em>Heliopsis scabra</em> (rough heliopsis)</td>
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<td><em>Helieborus niger</em> (Christmas rose)</td>
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<td><em>Hemerocallis</em> spp. (day lily)</td>
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<td><em>Heuchera sanguinea</em> (coral bells)</td>
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<tr>
<td><em>Hosta</em> spp. (plantain lily)</td>
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<tr>
<td><em>Iberis sempervirens</em> (evergreen candytuft)</td>
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<tr>
<td><em>Kniphofia uvaria</em> (red-hot poker)</td>
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<tr>
<td><em>Liatris punctata</em> (Kansas gay feather)</td>
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</table>
The Conservation Library Center of North America

ARTHUR H. CARHART, Consultant
Conservation Library Center

On July 1, 1963, the Conservation Library Center located at the Denver Public Library, was either 18 months or three years old. The Center was three years old if we date its history from that day, August 1960, when Denver's Librarian, John T. Eastlick, and Arthur H. Carhart, discovered both had been thinking about the need for a repository containing the literature and lore of conservation and agreed to work together to establish such a "center." It was 18 months if we date the Center's beginning January 1, 1962, when a grant from the American Conservation Association became available.

Whichever may be the point of beginning, this reports the Center's progress. The 460 lineal feet of shelf space assigned to the CLC, has only a few spaces not occupied. In some very limited sections are only several issues of a periodical, a few bulletins or a handful of mimeographed newsletters. But these are "seed." They represent a series of publications we may complete at a later date. Some items will be excluded because they are not pertinent to this Center; but this will happen only after they are carefully appraised as to their value. If not rightly part of this Conservation Center they may be routed then to some other point of usefulness.

Other sections of these shelves are stuffed. One tier has not only shelves filled, but the top carries a bad of materials to be sorted, appraised, classified. This 460-foot long "seed bed" of the Conservation Library Center is becoming crowded.

What does this "seed bed" of the Conservation Library Center contain? On July 1, 1962, 112 persons or organizations had sent various items to the CLC. Some sent limited offerings, but often rare ones. Others sent literally hundreds of items. Some sent diaries, some sent files of magazines, some sent books, some significant photos—a rich and varied array of gifts that forecast the sweep and worth of this Center.

As yet, the Conservation Library Center is not fully organized to serve those seeking information it contains. The accumulation of materials has been swift and considerable, specific funds had not been earmarked for cataloging and the immediate need was to keep record of the names of donors, what they have sent CLC and in the case of periodicals, set up another card file that lists what issues of magazines or journals are on hand, what issues missing. These card files are up-to-date. The acquisitions are stored on the "seed bed" shelves by donors and soon the next step, cataloging, will be under way.

In spite of the collection being not yet organized as it will be, some visitors, seeking information, have come to the Conservation Library Center and by pointing out two or three specific groupings, letting these patrons do their own searching, they have found data they wanted—and were very appreciative.


The "official staff" of the Conservation Library Center to date, has been limited to a consultant and a secretary.

With such a limited crew little could have been done without the cooperation that has been so abundant and continuous. The nation-wide cooperation of the many conservationists who had aided in building the first parts of the CLC has been indicated in the number of gifts received. But there is an area of cooperation that exists without which progress would have been slow and uncertain. This is the cooperation of all persons connected with and interested in the Denver Public Library.

SEEDS OF WISDOM?

A wise selection of seeds of choice plants must be made in December to be ready for sale at the Denver Botanic Gardens Annual Plant Sale scheduled next May 9 and 10.

Comparing success and failure of varieties grown at our Botanic Gardens and in the Denver City Parks were Dr. A. C. Hildreth, Director; Joseph Oppe, Botanist-Horticulturist, and Mike Ulaski, Greenhouse Superintendent. These gentlemen aided members of Around the Sea Sons Club planning committee in early selection of seeds for plants grown especially for this sale.

Seeds of Wisdom: Plan now to purchase many of your plants from the plant list to be mailed you in the March Green Thumb Newsletter. Not only are the plants offered for sale choice for this area, but your choice to purchase at this sale will assure the continued growth of Denver Botanic Gardens.
Dear Pete,

While browsing through the display of guest iris at Botanic Gardens last spring I was delighted with the outstanding bloom of Oriental poppies. In planning my perennial garden I'd like to include some of these majesties. Please tell me their names, where and when to get them?

Dee Lighted

Dear Dee,

Since we have about 53 varieties in our test garden I hesitate to guess which varieties delighted you.

According to Beverly Pincoski, keeper of the blooming records, 'Empress of India', deep scarlet and the intense 'Red Crinkles' with its crinkled petals caused much comment in late May. Blooming about that same time were 'Lavender Giant' and 'Lavender Glory', both with black basal spots and about 12 inches across. About May 15 bloomed the double clear orange 'Doubloon', peony-like and about seven inches in diameter.

'White Queen', large white with deep purple basal spots, 'Betty Anne', medium pink and 'Burgundy', medium-sized wine, bloomed in late May.

'Master Richard', coral pink, about 11 inches, bloomed near June 1 and

'Pandora', salmon-pink with red basal spots, ended the season about mid-June.

Apparently poppies like our soil conditions. According to Mrs. C. J. Christensen, who has championed the virtues of these bold beauties for almost 20 years, poppies prefer full sun, good drainage in average garden soil with plenty of room for growth, two feet between plants. Plant after August 1.

While local nurseries offer many varieties, the sources of poppies being tested at our Botanic Gardens were Walter Marx at Boring, Oregon, and Wayside Gardens, Mentor, Ohio.

Dear Gardeners,

It's an all-mail world where this column is concerned.

Do you have an outdoor or indoor gardening problem, a question concerning native or cultivated plants, a helpful tip you'd like to share? Perhaps you have a personally-devised garden gadget that lightens your work. Please send your questions or suggestions to me, Mrs. Pete, 1550 Midge Road, Littleton, Colo. 80120.

Without your mail this frail fails.

Pete-the-Ponderer
EXOTICS OF COLORADO, The Weeping Birch

HELEN MARSH ZEINER

Small catkins may be present during the winter months. With the coming of spring, these enlarge and open about the time the new leaves appear. We have three native birches in Colorado, but the weeping birch has come to us from Europe. Birches are, generally speaking, water-lovers and our commonest native birch is to be found along streams where it can be recognized by its reddish-brown bark marked with lenticels and its slender twigs and catkins.

There are several horticultural varieties of weeping birch. They differ mainly in the leaves, some of which are very finely cut.

Although it is a very lovely tree, weeping birch has several disadvantages of which you should be aware. First, it is not an easy tree to establish. It is hard to transplant. The roots must not be permitted to dry out during the transplanting process. With some special care, however, weeping birch can be established here, as the many handsome trees to be seen in Denver testify. Weeping birch is subject to sunscald and the bark of young trees should be protected during the winter months. It is also subject to drought damage and should never go into the winter with the roots dry. It is resistant to cold so long as it is not too dry.

Weeping birch is subject to beetle damage and to birch borer damage. Untreated infestations may shorten the life of the tree.

In spite of these disadvantages, the weeping birch is so striking in appearance that it is certainly worth the effort of establishing and maintaining. It is truly an ornamental tree.

LEE CHAMBERS
TREE SURGEON
1594 S. Forest 756-3366
COMPLETE CARE AND MAINTENANCE OF TREES, SHRUBS AND EVERGREENS

House Plants, Their Care and Selection

THE DENVER BOTANIC GARDENS will offer an unusual opportunity to interested persons to learn about the selection and proper care of house plants with a course of five sessions on the subject starting January 27, 1964.

Dr. Helen Marsh Zeiner will conduct the classes. She is very well known to readers of The Green Thumb magazine, a publication of Denver Botanic Gardens, for her articles on house plants and for her articles which appear in The Rocky Mountain News on this same subject.

The dates for the five lectures are set for: January 27, February 3, February 11, February 17 and February 24, beginning at 2:00 p.m. and lasting approximately 1½ hours. The public is invited. A registration fee of $4.00 will be charged to members of Denver Botanic Gardens, and a fee of $5.00 will be charged to non-members.

This course, “House Plants, Their Care and Selection,” will cover such subjects as the heat, light and moisture requirements of particular plants as well as proper methods of fertilization, correct methods of repotting and identification.

Interested persons are urged to telephone Botanic Gardens House at 297-2428 or 297-2632 between the hours of 8:30 a.m. to 5:00 p.m., Monday through Friday. It is suggested that this be done as soon as possible because enrollment will be limited to 40 persons.
There are two specimens of the dawn redwood (Metasequoia glyptostroboides) growing at the City Park Unit of the Denver Botanic Gardens. (See map for location.) The dawn redwood is a relative newcomer to the field of woody ornamental horticulture. It was first described in 1948 by Drs. W. C. Cheng and H. H. Hu, Chinese botanists, from living material collected in Szechuan and Hupeh Provinces in China. Prior to this, Metasequoia had been described and was known to exist only in the Mesozoic fossil flora of Korea and Japan.

In 1947, the Arnold Arboretum financed an expedition to collect seeds of this unusual tree. In January, 1948 the first seed arrived in this country. Seed from this original shipment was distributed throughout the world. The origin of most of the existing specimens can be traced back to this original shipment of seed.

A member of the bald cypress family (Taxodiaceae) the dawn redwood is characterized by its deciduous, two-ranked, opposite leaves which resemble those of the bald cypress (Taxodium). In the wild state, the dawn redwood grows to a height of 115 feet, with trunk diameters of 6½ to 9½ feet at the base.

The City Park Unit specimens are the only ones in Denver with which the author is familiar. Originally, four plants were received from the Arnold Arboretum in 1954. In the spring of 1957, all four specimens were trans-
planted from the Pinetum, south of the Museum Building, to their present exposed location. In July, 1960 two of the specimens died as a result of damage incurred during the spring freezes of that year. The two remaining trees are now eight and ten feet high.

The results of the City Park Unit trials have shown that the dawn redwood, when planted in an exposed location, is highly susceptible to damage as a result of sun-scalding. In addition, all the specimens, at one time or another, have shown symptoms of chlorosis. This chlorotic condition was easily overcome by treating the affected plants with an iron chelate compound.

Based on the above conclusions, it is highly suspectable that the dawn redwood has but limited value as an ornamental tree in the Denver area. If planted in protected locations, such as to the north of a building or group of plants, it might be expected to do better than when planted in exposed sites.

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