TREES IN WINTER

By IRVIN J. McCRARY
"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit.

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Tentative Outline Submitted by The Colorado Forestry and Horticultural Association to Mayor Stapleton, August 16, 1944

In Re

THE DENVER ARBORETUM AND BOTANICAL GARDEN

The Association urges the early creation of "The Denver Arboretum and Botanical Garden" as a Living War Memorial and Public Park. To that end it suggests that adequate acreage now owned by the City and not in use along the Platte River Drive and Driveways lying North of Overland Park and to the West of the golf course be set aside for and dedicated to that specific purpose.

Following the general plan of the Washington Arboretum in Seattle, containing two hundred sixty acres, and the administrative plan of The Colorado Museum of Natural History in City Park, Denver, it is suggested:

1) That the Denver Arboretum and Botanical Gardens be developed as a Living War Memorial Public Park and that funds be made available by the City to install the necessary improvements, irrigation and lighting systems, walks, roads and waterways and to provide an annual appropriation for proper maintenance and for policing the area;

2) That the Denver Arboretum and Botanical Garden Foundation be organized, not for profit, to plan and administer the War Memorial under the direction of not less than fifteen Trustees who are representative and interested citizens of Denver said Trustees to be originally appointed by the Mayor but to be self-perpetuating thereafter, which body will be charged with the duty of-

A. Preparing the plans for the Arboretum and Botanical Gardens;

B. Executing the same as funds are made available;

C. Supervising and directing operations and maintenance, including selecting and employing the Director and his staff;

D. Interesting the general public and encouraging its participation in the development of the Gardens;

E. Soliciting supplemental funds thereafter, gifts of plant collections and individual specimens through various types of membership at large, memorials, and ultimately for endowment.

B. Contracting with the University of Denver and/or other institutions of learning to furnish their technical staff or staffs for the carrying on of scientific study and experiment, and conduct of classes and lectures on Silviculture, Horticulture and Gardening, and if expedient, to assign thereto detailed administrative and technical control of such parts of the Botanical Gardens as may be desirable for the carrying on of particular research.

The Colorado Forestry and Horticultural Association calls attention to the attached list of reasons, among many more, why the City should create an Arboretum and Botanical Garden as a public asset and as part of its postwar planning. We believe the initial step of setting up a proper organization, dedicating adequate acreage to its use and preparing general plans for its development as an entity should be undertaken without undue delay.

If on or before January 1st, 1945, the City of Denver shall have taken these initial steps and shall have legally created the Foundation, appointed its Trustees and irrevocably dedicated to its use adequate acreage, The Colorado Forestry and
Horticulture Association will thereupon make a donation of $5,000 to the Foundation for the specific purpose of meeting its costs, covering the preparation of general plans for the landscaping and improvement of the area, including walks, roads and waterways, lighting, water and drainage systems, greenhouses, sheds and equipment, said plans to be conceived, studied, and prepared for a finished whole or entity—yet following which plans various units of the enterprise may be constructed from time to time as funds therefor are made available—with the general good faith understanding that the City will furnish sufficient funds to the Foundation during 1945 to enable it to make a not too modest beginning of an Arboretum and Botanical Garden which will be an appropriate War Memorial and a credit to the City of Denver.

Functions of an Arboretum and Botanical Garden and Certain Advantages, Among Many Others, To Be Derived by the Public Therefrom

1. To make a comprehensive collection of trees and woody plants, to label them properly and arrange them according to their botanical relations, for the purpose of scientific study and permanent control;

2. To increase the productivity and economic importance of the area by introducing species which have not been grown here before;

3. To encourage the study of taxonomy and evolution as a basis for important commercial and utilitarian developments in agriculture, forestry, horticulture, pharmacy and botany;

4. To provide an authorized quarantine station where importations may be held under observation long enough to make sure they are free from blights and pests such as earwigs and white pine blister rust;

5. To provide a place for the horticulturist to introduce foreign species and the formation of new varieties;

6. To provide a testing ground for nursery men;

7. To provide a laboratory for students of botany for the study of plant habits and plant relations;

8. To provide training in various forms—in Forestry, Horticulture and Gardening and secure placement in employment with emphasis upon the needs of returning veterans;

9. To provide opportunity for plant lovers to learn to recognize plants and know them by their correct names. They will also learn the requirements for the successful cultivation of their favorite varieties;

10. To provide recreational opportunities for the public. The Arboretum and Botanical Gardens will offer unusual facilities for physical and mental recreation—physical from the use of the paths and waterways, mental from the stimulus to the powers of observation, and the pleasure of learning to know and recognize plants of the world;

11. To provide a bird sanctuary—waterways will offer protection and peaceful surroundings for wild waterfowl. The entire area will be filled with song birds.

12. To provide an additional attraction for tourists. Great public interest will center in the Arboretum and Botanical Garden and as a Living War Memorial large numbers of people will be thereby attracted to Denver.

SURVEY OF ELM TREE SCALE

A group of tree experts in conjunction with City Forester Joseph A. Bixby and members of the U. S. Forest Service have just made a survey of the scale on Denver's American Elms. Full details of this survey will be published in The Green Thumb. As this issue goes to press complete returns have been made on only the Park Hill district and one or two others.

With the exception of the parkways on 17th Avenue, Forest Street and Monaco Boulevard, the situation in Park Hill is little short of deplorable. 17th Avenue Parkway trees were pruned and sprayed by the City last spring, and these American Elms are in splendid condition now. With a few exceptions, however, the American Elms that are not on these boulevards and parkways and subject to City maintenance have been badly neglected, and unless they are drastically pruned this fall and winter and thoroughly sprayed with a miscible oil spray next spring, before leafing out, irreparable damage will result.

In the Montclair area no trees were found which were entirely free from scale, and many were very heavily infested.

In University Park all American Elms were affected by scale, and those around the older homes badly.

The north side of East 7th Avenue, between Pennsylvania and Josephine Streets, had but slight infestation, whereas 40% of all trees were heavily infested between Grant and Corona Streets on both sides of 16th Avenue.

As soon as the survey is completed City officials will notify all property owners whose trees should be sprayed.

EACH ONE GET FIVE

New members are needed if this organization is to reach the objectives for which it is striving. There are thousands of persons in Colorado who would appreciate being members, if someone would tell them about it and how to join. The people who can be expected to do the best job of bringing in new members are the present members. Therefore, your membership committee would like to have each member take the responsibility of trying to bring in at least five new members. It will be easy.

Approach men and women who are interested in growing things and tell them about this association, its objectives and benefits. Tell them about the "Green Thumb"—the only horticultural magazine devoted exclusively to the subject as it pertains to Colorado and the west. Send them your name, address and one dollar for a year's membership, or five dollars for a sustaining membership to Mr. W. J. Isc, 831 14th St., Denver 2, Colo.

Don't put it off. Write down the names of your prospects now and see them, write them or telephone them as soon as possible.

—The Membership Committee.
EUROPEAN ELM SCALE
F. HERBERT GATES, State Entomologist

European Elm Scale (Gossyparia spuria) as the name implies, is probably an introduction from Europe on Nursery stock and was first noticed in the United States in 1884, in Winchester County, New York. It later reported from Massachusetts and District of Columbia. In 1894 it was reported from California, and later from practically all western States. The insect now is most generally distributed.

DESCRIPTION
The adult females are readily recognized by the white cottony fringes or rings around the oval dark reddish brown bodies, and measure from 3 to 4 m.m. (.08 inch) in length and are generally found on the hard wood of the trees.

LIFE HISTORY
The insect has but one generation each year. Beginning in May and through August, the eggs are deposited under the female. These eggs hatch in a few hours and crawl to the leaves, usually the mid-rib. This is known as the crawler stage.

FALL AND EARLY WINTER
Partly grown second instar insects migrate to twigs and become established in the cracks, crevices and the base of over wintering buds.

LATE WINTER AND EARLY SPRING
Molt to third instar (both males and females are produced, males do not resemble females but look more like minute flies). At this period mating takes place and the females settle down on twigs and limbs. (This is the time for effective control.)

SPRINGS AND SUMMER
Beginning in May and through August, eggs are deposited under the female and, as stated before, hatch in a few hours and migrate to the leaves.

NATURE OF INJURY
First notice of injury is the "black, sooty, sticky" appearance of the tree. This sooty appearance of the tree is the result of a secondary mold that grows on the "honey dew" secreted by the adult scale. It is at this time that the lawns, walks and automobiles are dirty and sticky and people say the "trees are bleeding."

HOST PLANTS
European Elm Scale attacks all species of American Slippery, Cork, Scotch and English Elm; also in those areas where Chinese Elms have been planted, many trees being now so heavily infested as to discourage further plantings.

METHOD OF DISTRIBUTION
Infestations in new localities occur chiefly through importation of infested nursery stock. In those areas infested, distribution and reinfection are by means of-

1. Wind blown insects and infested leaves.
2. Scale crawling from tree to tree.
3. Carried by ants that attend them for the honey dew.
4. Carried on the feet of birds and squirrels.
5. Movement of infested nursery stock.

METHODS OF CONTROL
Success depends upon a knowledge of the "Life History" of the insect and in availing ourselves of this knowledge to apply control measures at the correct time, which measures consist primarily of spraying.

SPRAYS
Oil—Miscible oil and Oil Emulsions are the most effective method of control.

Miscible Oil should be used at the rate of 1 gallon to 15 gallons of water.

Oil Emulsion should be used at the rate of 1 gallon to 25 gallons of water. However, since there are several companies manufacturing spray oil, it is advisable to follow the directions of the manufacturers.

"Never apply spray oil in the winter or during freezing weather."

WATER
Water Spray may be applied just before foliage forms as at this time the activity of the eggs and the insect are aroused. The female scale entering adult life as the buds are forming. The insects are large and plump and white ringed by the time the elm seeds begin to fall; this is about two weeks before the leaves appear.

The insects are easily dislodged and destroyed at this time as there are no leaves on the tree to interfere. It has been found that ordinary pressure from the hydrant, a solid stream of water will dislodge insects 10 feet from the nozzle. For trees over 20 feet high, the city fire engine or high pressure can be used. Care should be taken to hit the tree from all angles.

CITY OBLIGATION
The elm is one of the most valuable and popular shade trees... The appearance of a city or town is greatly enhanced by fine trees and the loss of a tree is not only a loss to the owner but also to the community, just as a loss by fire. The ordinary spraying and daily sprayings that they may bloom as well as their feeble constitutions permit before the last of their dull, brown leaves is overcome by bugs and blights.

I once had the privilege of traversing eastern Nebraska and eastern South Dakota in June. It was not what I'd pick for a vacation or horticultural sight-seeing tour, but the beauty of the exquisitely tinted wild roses along the roadsides compensated for the journey. I was tempted to add this striking coral color to the other wild roses which mean so much to me, I inquired at several of Nebraska's big nurseries, without success, for plants. People just wouldn't buy 'em. So the nurseries use them for undistorted of roses that don't have any business in Nebraska, and sell them to people who don't have any business trying to grow them. The nursery people readily agreed that the Wild Roses were prettier than the things they had to graft on to them, but pointed out that a nursery is the public's servant.

I can grow wild roses. I am sure Quercus and some others can also do nice jobs with hybrid teas, but I advocate a law forbidding most people even to try.

And so Quercus comes along and castigates my three friends! Which leads to a line of speculative thought. For years those who know have kept back the truth... If they once did what I have described... Would there be the popular appellation of "Poison Oak," for poisonous sumac? Possibly the popular notion is right. Perhaps there is a true Poison Oak. Quercus just calls himself Quercus, doesn't give us his other name. Can it be Toxixcarius?
ANSWERS TO "QUERCUS" ARTICLE ON "NATIVES"

"I think that "Natives" is a good article because it’s so annoying. I almost have to agree with it, and yet I want to refute everything he says. It makes me curious that he prides his thimbleberries and chokecherries, which along with the dogwood, plums and hawthorns, I love passionately. (Possibly because I dug them up myself.)"

"Well, he mentions sentiment. As for the flowers, I know nothing lovelier than the native iris. It might be interesting to see if anyone else has the reaction I have, and if so, it might serve to make Coloradans keenly aware of just what their "natives" are. I’m not positive that’s not "Quercus" true aim."

—Betula (Birch).

"Quercus"—The best page in the Green Thumb, and that’s saying a lot, for it is worth every mite of the dollar year membership. That’s my short statement in favor of the column—but—being a woman, I must add a bit of criticism in favor of our "Natives."

"Did you ever bring agate, moonstone or shells and coral bits home from the seashore? Did you notice how these gorgeous 'city creatures' were eclipsed by the nearby fields of penstemon, bistort, paintbrush in its many hues, mertensia, daisies of every description, coin flowers, fairy trumpet (gilia) fireweed and bee plant, thimbleberry blossoms, or a carpet of alpine pinks, or kinnikinnick and Oregon grape in bloom or berry?"

"Do fine feathers always make fine birds?"

"Quercus, now I ask you, just why do you hie off to the hills whenever you can—and I know you do? Queer? No. I don’t think so."

"Sincerely your enthusiastic reader."

—Rhus (Skunkbrush).

I’ve a thing or two to say about Quercus, or rather about his September contribution. To criticize a man with a private botanical garden of native plants for not introducing Elmoohr iris and the latest in headed giant dahlias is a little like condemning Socrates and Lincoln for not looking like Apollo or crooning like Bing Crosby. Those were not the things they were trying to do. Plant explorers have introduced many beautiful foreign plants and hybridizers have made more exquisite both foreign and native ones. We who grow for garden pictures and floral arrangements take full advantage of their work. And rightly. But what has that to do with the man who wants to collect our natives? To my thinking, there are all too few gardens of our native plants. Didn’t Mr. Andrews have one, valuable to the world as well as to us?"

—Del Phinium.

TREE TRIMMING FOR COLORADO

GEORGE W. KELLY

We have received several requests for a short summary of the essential requirements for proper trimming of trees. With the shortage of experienced experts it is important that we know enough about what constitutes a good trim job to be able to supervise inexperienced help, or do the important things ourselves.

In the first place we should consider the reasons for trimming a tree. No cut should be made without a definite reason. Inexperienced people can get a lot of brush out of a tree in a short time, but may do more harm than good.

Trimming is done to:

Improve or maintain desirable shape, symmetrical or natural, by:

Removing too low or too high limbs.

Cutting back lop-sided trees.

Removing limbs which interfere with buildings, wires or other more valuable trees.

Build up a sturdy framework of limbs, branches and crotches.

Cutting out bad crotches when small.

Shortening back too heavy limbs, or thimbleberry blossoms, or a carpet of alpine pinks, or kinnikinnick and Oregon grape in bloom or berry?

Thinning to reduce weight and minimize storm damage.

Removing duplicate, weak, rubbing or misplaced limbs.

Remove dead limbs so that the scar can heal quickly.

In shaping a tree you cannot add a limb to fill a vacancy. All you can do is cut back the limbs that are too long and let the shorter ones catch up.

Often, of more importance than the removal of live limbs is the treatment of former scars. removal of dead stubs and shaping, draining or filling of partly decayed holes. In every operation the thought should be in mind to so shape the wound that the new growth can grow over it as soon as possible. This usually means to so streamline the wound that the sap flowing by can deposit new material and heal it over.

Painting is not as important here as in a rainy country, but for cuts of two inches or more, there is liable to be decay before it can naturally heal over, it is necessary. An asphalt roof paint is good, as it is flexible.

Bracing is necessary in the case of bad crotches which are liable to break or those partly split by storms. On smaller limbs screws connected with clothesline wire are effective. Larger limbs and trunks of trees require bolts at the split and cables higher in the crotch to remove the strain. This is technical operation which requires a study of each particular job.

In removing large heavy limbs it is safest to first remove the bulk of the weight of the limb, and then make the final cut up to avoid splitting and peeling down. It will be necessary to lower large limbs carefully with a rope. It is always safest to make an undercut below the main cut of a limb to avoid splintering down and disfiguring the tree.

When to prune is sometimes a question. Most trees can be trimmed at any time convenient, but they are easier to work in the winter when the leaves are off. Wounds will heal over sooner if made just before the new growth starts in spring. Maples, Birch, Walnut and some others should only be trimmed while in leaf, as otherwise there is sometimes excessive bleeding.

Much tree trimming is necessitated by neglect or improper treatment. It is much more important to give trees the right care, especially when small, than spend a lot of time later correcting mistakes. These things should be watched. Get good, healthy, well shaped trees with a liberal amount of roots, kept fresh until planted. Be sure that they are transplanted carefully and promptly. Do not expect vigorous healthy trees unless planted in good soil. If necessary, feed and much later, when the tree planted is a suitable variety for the situation, such as shade, moisture, protection and soil. Do not plant too close together for ultimate proper development. Inspect frequently for disease or insect pests and treat at once before serious damage is done. Water THOROUGHLY rather than frequently. It is the water that gets down to the growing roots at counts.

Here are some of the signs of a poor trim job: Limb stubs left unnecessarily long; "topping," or removal of upper limbs larger than one inch in diameter without a mighty good reason; "thinning" just to make brush, with no particular reason; leaving dead stubs and decayed spots without cleaning out or draining.

Learn something about the growth of a tree, how the sap flows, where the live cambium layer is, the function of the roots and leaves, and you will understand the why of these trimming rules.
COTTONWOODS
By S. R. DeBoer, Landscape Architect

This is a story of western cottonwoods by one who likes cottonwoods. Let us make an understanding right here. If you hate cottonwoods, if the cotton causes you no end of misery, do not read on; you will only become irritated. You might read the last paragraph where I am going to recommend that all of us, including you, plant cottonwoods, but that we use the male or staminate tree which bears no cotton and which the nurseries have propagated these many years.

One day sketching the beautiful oaks and beeches on a Northern England estate, from which the squire duly removed me, even if not forcibly, it struck me that the trees I was drawing were no larger than my cottonwoods on Iliff Avenue and that native, the lake in Washington Park. You have to draw trees to appreciate their beauty. Try a big cottonwood. The stem is the blackest of black. Its grooves are deep and rugged. Even if the tree is a female and cotton bearing one, it is decidedly masculine in character, masculine in the sense of strong.

A tree which has reached its full hundred foot spread like the one at Franklin and Ohio Avenue is more majestic than the oaks in other climates. The buds and the twigs are big and strong; it is not a graceful tree, it is a robust and sturdy tree. A thousand artists, young ones and mature ones, have drawn the cottonwoods on Iliff Avenue, but few look at the puny elms or maples nearby.

The cottonwood to me expresses the native, the native of Colorado's nature. It was here when the Indian was here; many of the trees we now admire saw the Indian in his freedom on the plains. Like the Indian, however, the cottonwood does not like the white man's civilization. The cottonwoods gradually retreat from his cities. In the smoky and soot-laden air they become diseased and die. Hard packed soil or pavements destroy more cottonwoods than the willful hand of city beautifiers.

Once I was making a study for a western city and arrived there in the evening. Met at the station by the Mayor, I discovered that there was a council meeting that night, also that the council and he had cut down all the cottonwoods in town. The meeting, rather belated, was called by irate citizens to vent their feelings on the council, and I was to act as advisor for the defense and explain the wonderful work the council had done. Was I on the spot. I still don't know how I got out of it, but at any rate I saved the Mayor's friendship. In spite of my lame efforts this fellow had cut down all the trees and work together until his death, dreaming new pictures and new spots in the little town in the dust-swept areas. He came to agree with me on cottonwoods.

I know that to the fellow worrying with hayfever, it is little compensation that someone else likes the cottonwoods, actually can live under them, admires their beauty and power, their hardiness and lack of disease. Little it interests him that it is the historical tree of the West with at least one hangman tree in each town.

Large trees occasionally must be cut down; it is our idea of progress. I hesitate at every one of them. I think of the ages thru which the tree has lived, the children that played around its great trunk, the mothers who sat there watching them. I think of the serious councils men may have held at its foot, how it has cheered the weary traveler. I think of it until some client says cut it down, and down I cut it, and if it was a historical tree, it rates a headline saying, 'Landmark Removed,' which is the obituary of all landmarks, and I still have to find a headline saying, "Landmark Preserved."

I set out to give comfort to my hayfever friends. So here it is. Let's compromise on the cottonwood business and plant new ones of the staminate or male kind. If and when trees have to be removed, perforce and per se, well let's make sure that it is not a male one, and let's carefully think about the female ones and ask a medico if the hayfever actually comes from there. Then let's give our children a tree to sit under and plant a male cottonwood. (And 'That's that' as the Denver Post likes to say.)

BOOKS FOR CHRISTMAS

Herbs for the Medieval Household, by Margaret B. Freeman. Published by The Metropolitan Museum of Art, New York, $1.50. For the lover of herbs, or of art, this is a nice selection. A beautiful book at a nominal price.


First the Flower, Then the Fruit, by Jannette May Lucas. J. B. Lippincott Co., 1943, $2.00. Intended for young people, but will be appreciated by anyone who loves beauty of growing plants.

For year round profit and pleasure give a subscription to "The Home Garden." Published by The American Garden Guild, subscription office, 444 Madison Ave., New York 22, N. Y., $3.00 per year. The country's horticultural experts make up the Editorial Board. Contains much horticultural information of value to gardeners anywhere in the United States.

* * * * *
A new low-cost plastic, Hydroxylin, has been developed in a government laboratory as a general purpose material made from mill-run sawdust or chips.

* * * * *

The City of Grand Junction has a definite plan for Street Tree Planting. Certain streets are set aside for Elms, others for Honey Locust, Linden, White Ash, Kentucky Coffee Tree. Some are treated on informal, open plans, others are set aside as boulevards with such flowering trees as Crab Apple, Hawthorn, Japanese Varnish Tree and Mountain Ash being featured.
COLONEL EDGAR TARBELL ENSIGN
Father of Colorado Forestry

FOREWORD. Just sixty years ago, in November, 1884, the Colorado State Forestry Association was born. Its father was Colonel Edgar T. Ensign who served as State Forest Commissioner from 1885 to 1891. His efforts in behalf of forest protection had a great deal to do with the creation of the U. S. Forest Service. We are pleased to present Professor Morrill’s article on Colonel Ensign.

Born in Moriah, New York, in 1839, Colonel Ensign was a resident from 1856 to 1874 of Iowa, from which state he volunteered in 1861 to defend the Union. As a soldier he advanced through various grades to a Colonelcy. He was admitted to the Iowa bar and made District Attorney in Des Moines. In 1872 he married Lilla Butiss.

Attracted by the opportunities in the West, Colonel Ensign moved to Colorado Springs in 1874, opened a law office and soon afterward was Commissioner of the United States Circuit Court. Later, while associated with Paul Hutchinson in the real estate business, he took part in the early development of Colorado Springs and promoted several additions. He was also an organizer and later president of both the Assurance Savings and Loan Association, and the First National Bank of Colorado Springs. He was an active member of the Congregational Church of Colorado Springs.

In the course of time Colonel Ensign showed much concern for the waste and current destruction of Colorado forests through exploitation and fire. In 1884 he wrote a series of articles published in the “Colorado Springs Gazette” on the pressing need of forest conservation. Under his leadership the Colorado State Forestry Association was organized in November 1884.

The organization considered and passed resolutions recommending to the General Assembly the passage of a number of forest protection measures which were enacted into law that same year.

Among these laws was one creating the office of Colorado State Forest Commissioner. Quite logically, Governor Eaton appointed Colonel Ensign to this office. The measure carried no appropriation, yet the Colonel accepted, knowing full well the burden on his time and finances this would involve. As William G. M. Stone, President of the Colorado Forestry Association, commented, “Col. Ensign did not hesitate; he accepted the appointment and went to work as though he received a salary of $10,000 a year.” However, the state provided stationery, printing, postage, etc.

As State Forest Commissioner he organized the County Commissioners, and through them the County Sheriffs and Road Commissioners, for a measure of forest protection. Fire warnings were posted and penalties for allowing camp fires to escape were publicized.

As a forester, I am amazed at the scope, character and excellence of the reports of Colonel Ensign, written from 1885 through 1890 at a time when no forest schools existed in the United States and when little forestry literature existed in this country. He recognized the indirect value of the forests in regulating water runoff, as well as their economic value in attracting tourists and sportsmen. He called attention to the direct value in furnishing material for our local industries.

Colonel Ensign led the early efforts of the State Forestry Association and the General Assembly to transfer the custody of the public domain forests to that of the State. The Federal Government had done very little along such lines. No Forest Reserves had been established and there were no forest rangers. Many believed the State could do a better job. In one of his biennial reports he tells of a growing public concern over the deterioration of the forests of Colorado.

Failing in the plan for State custody of the forests, the Association next pressed for adequate federal protection of the public domain forests by the federal government. These efforts, aided by support from public-spirited people largely in the East, finally led to the Forest Reserve Policy adopted in 1891 by Congress. Belatedly, the Forest Reserves were manned in 1898.

There is no doubt that the Colorado Forestry Association contributed greatly to that wise policy which has led to the present system of National Forests.

The Association has had a brilliant past and deserves perpetuation not only for what it has accomplished but what we hope it may be able, united with the Horticultural Association, to do for public service in the future.

DO PLANTS GET HUNGRY?

An English book, published by His Majesty’s Stationery Office in London, is The Diagnosis of Mineral Deficiencies in Plants, by T. Wallace. It is illustrated with a Colour Atlas and Guide, and is significant—for England. It can only be a guide for the Rocky Mountain Region with its own special problems.

The National Fertilizer Association, in conjunction with the American Society of Agronomy, publishes Hunger Signs in Crops, an interesting help in the determination of mineral deficiencies.

A NEW, GOOD BOOK ON SHADE TREES

The Oxford University Press publishes “Maintenance of Shade and Ornamental Trees,” by P. P. Parone. It is good, up-to-date, and takes the place of Wm. Selloroff’s Shade Trees in Towns and Cities, and of Bernard Fernow’s The Care of Trees—now both out of print. It is a valuable addition to Victor H. Ries—Pruning and Repair of Trees, Shrubs and Ornamentals, and to Elbert Peets—Practical Tree Repair.
SOIL DEFICIENCIES AND MALNUTRITION

Do you know that the brain stores great quantities of aluminum? I can't tell you why, but who knows, perhaps it is the difference between the aluminum content of the carrot grown in my garden and the carrot grown in, say, Quercus' garden which makes the latter contributor so much smarter. It may be that Mr. A. F. Hoffman's (County Extension Agent of Delta) experiments in the effects of soil deficiencies on human health and behavior will lead to discoveries of such a nature. In which case, my problem would then be to learn how to get a carrot to absorb aluminum in a form in which I can absorb it so I will be as smart as Quercus. Obviously one cannot just feed an animal deficient in such a nature. In which case, my problem would then be to learn how to get a carrot to absorb aluminum in a form in which I can absorb it so I will be as smart as Quercus. Obviously one cannot just feed an old pot to a carrot.

This train of thought comes from reading about Mr. Hoffman's fascinating experiments in Delta County, Being County Extension Agent of the State Agricultural College his chief concern is the soil which produces food consumed by man and beast in his county. He is trying to find out if problems in human nutrition and behavior are related to problems in crop yield and are really problems of the soil.

Most people now believe that land will eventually "wear out" for they have seen enough of erosion, dust bowls, "Tobacco Roads" and such to convince them. They understand that land fertility must be maintained through proper use, saving crop residues, preservation of the elements in barnyard manure and use of fertilizing elements. He writes, "The Western Slope and San Juan Basin of Colorado were occupied by the Ute Indians until the fall of 1880. The soil is now in the number of years it has been farmed. Favorable climatic conditions and abundance of irrigation water have combined to make this an area of high crop yields. Over 50 years ago Delta County had a '100 Bushel Corn Club.' Now, to the natural precipitation farmers add irrigation water until the total is equivalent to precipitation in humid areas. The application of this much water during the short growing season creates soil fertility problems due to sheet erosion and leaching. These factors combine with heavy crop removal to make the soils of this area grow older quickly. Soil depletion is obvious in varied forms. Yields of alfalfa hay in spite of the now general practice of applying superphosphate, have been on a downward trend."

He says this depletion causes "Anemic conditions in hogs due to copper deficiency, leg weaknesses in poultry due to manganese deficiency, and loss of type and bone in livestock generally."

Mr. Hoffman believes that the most important part of soil depletion may be its effect upon human health and behavior, for "food is the result of soil," but he is not one to be content with mere conjecture. "Because the application of good principles of farming has not produced results in Delta County, an attempt has been made during the past four years to arrive at basic causes for such failures." In the hundreds of soil and fertilizer tests conducted it was proved that boron, manganese, sulphur, phosphorus and potassium were often lacking. "Over 1,900 soil samples have been gathered and analyzed this year. Three hundred field demonstrations have been started and several hundred more will soon be started. The deficiencies are then charted on a county map."

Authentic information from the soil science of human nutrition tells us such tidbits as: blood will not coagulate without calcium, phosphorus is needed for cell growth, potassium and sodium permit muscular flexibility. Cranberries contain that essential iodine which is lacking in the teeth up to a certain amount, but if you get too much you may get speckled teeth. Iron is an essential part of every living cell, but copper must be present to make it effective. Cobalt helps build red corpuscles, arsenic is in your hair. And so it goes with all the elements and also vitamins, and who knows what other mysteries still hidden in the soil and foods that come from it.

Mr. Hoffman has prepared an amazingly complete outline of constructive action to be taken by this county which has become so soil and health conscious. If other counties wish to use it as a model they may write him for his proposed community project. This is a tremendous field, and we feel that Mr. Hoffman is to be heartily congratulated on his extensive study.

—Frances W. Hadley.
the only tall blue flower we can de-
pend upon here." That statement
calls attention to the great wealth
of blue flowers to be found in Colo-
rado. A trip into the mountains at
almost any time during the growing
season reveals that here is the natural
home of flowers that reflect the sky.
Harebells, lupine, larkspur, vervain,
gentian, sage—there is hardly a time
when wildflowers are not blue on our
plains and hillslopes way up to the
Alpine forgetmenot.

The wealth of blue perennial's from
which to select garden favorites is
equally great. From early squills,
violets and anchusas to the August-
blooming platycodons and scabiosa
fischieta and the even later blue sages.

Mr. Andrews made known to the
gardening fraternity, our perennial
Alpine forgetmenot.

Colorado soil suits delphiniums
and wants NO LIME to keep them
happy. Sifted coal ashes over the
crowns in the winter do no harm
and may be of some value. Planting too
depth may be an encouragement to
rooting or divisions in the spring. preferably
more about garden insects. and fertilizers and new plant introductions and all
falling snow on low evergreens. When limbs are broken, cut them off close up
in the north angle of a building, surrounded
by other tall-growing perennials,
over-fertilized and over-watered, will
give a very poor account of itself, if
it does not die outright. It needs
light and air as much as does a peony
or a rose. Robbed of those two re-
quirements, it cannot be expected
to grow tall and blue. Use columbine,
blue phlox, or other shade-lovers in
some of breath-taking beauty.
The owner of such a plant may
perpetuate its loveliness by cuttings
or divisions in the spring, preferably
of its third year. Or he may extend
the plant's life by letting it rest
between blooming periods and reduc-
ing the number of spikes of fall
bloom. The older the plant, the more
susceptible it is to depredations by
insects, for which reason the cut-
flower growers replant frequently
and, like all good farmers, practice
crop rotation. As control of pests is
not difficult, the home gardener
may let his plants live out the natural
cycle of their lives.

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There are usually several weeks in winter when garden construction can
conveniently be done. Build pools, platforms, fireplaces, walls and walks now
when other garden work is not pressing. Unless it is liable to be very cold in
the night sky. Thereafter work can be protected with a covering of burlap, straw, manure
or blankets.

There should be some "bad" days now when there is nothing that you
can do out of doors and you can feel free to sit and read about some of the
many interesting things connected with gardening. Now is a chance to learn
more about garden insects, and fertilizers and new plant introductions and all
those forty seven things you have been too busy all summer to learn about.

FALL GARDEN NOTES

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If there are improvements needed in your garden (and whose garden does not
need improvements) now is your opportunity to plan those things that you
will need. Better put it on paper or you will forget. One of the trials (and
joys) of a garden is that it never "stays put." The best planned garden will
look wrong in a few years if there is not a continual revising and renewing,
and trimming, and dividing of plants. A garden left alone will soon be dominated
by all the hardy rank growing things, and the nice tender plants crowded out.

How about extending the joys of growing things into the winter by plant-
ing evergreen window boxes. Small spruce, fir, juniper, pine, myrtle, English
ivy and euonymus are suitable for this. Liven them up with stems of bright
berries from shrubs and trees. These can be renewed occasionally.

Every home (or office) should have some sunny window where a few
hardy perennials can be grown during the winter. If you do not have a
window box, try only those plants which have proven that they can take it. Any florist
should be able to advise you.

Because the leaves and flowers are all gone is no reason to think that there is
no beauty left in growing things. Now is when we should enjoy the ever-
greens, the bright berries which still persist, the plants with bright colored stems
and the varied forms of the bare trees and shrubs. Learn to know the
trees from their bare outlines against the sky. It is an interesting game.

When the cold weather comes and the snows cover everything, remember
the birds. Have cornstalk shelters erected for the ground feeders, and shelters
and feeding stations in the trees for other birds. The birds will soon find it out
if suitable food is regularly available.

Horticulturists should not have to worry long over their Christmas lists
for other gardeners. Bulbs, seeds, tools and books offer unlimited possibilities.
And most any good nurseryman will arrange for you to give a Christmas order
for those plants which must be moved in spring. Garden magazines are always
welcome. (How about sending the Green Thumb to several of your plant-
loving friends?)

When ever you have a suitable tree, it is a fine thing to decorate a living
tree for Christmas. Many plants a spruce or fir in a suitable location for that
purpose. A well decorated outdoor Christmas tree gives pleasure to many people
going by and helps to prevent the overcutting of forest trees for temporary
indoor use.

If possible shorten back the rank growth on Chinese elms to prevent storm
damage. When the first wet snows come check up on all the evergreens and
pull them in that they are not weighing forth and have grown and broken.
Shake them gently so that you do not do more damage than the snow may
have caused. Begin the removal now of piles snow on low evergreens.
When limbs are broken, cut them off close up
to the stem if they are too bad, and if there is a chance to save them tie them
up until you can get an expert to care for them. (Try to get one these days.)
FALL GARDEN NOTES

If you intend to plant any tulips, narcissus, lilies or other fall bulbs, do so at once, as the sooner they are in the ground the better. In Colorado plant them a little deeper than eastern growers recommend. A bed spaded deeply helps.

During the warm days which we usually have in November and December it is a good time to clean up the garden; dispose of limbs and stems too coarse to make compost, rake up leaves and plant tops which are suitable for the compost heap, and spade up the annual beds. Spade under some good manure or compost. Fall spaded soil will be in better condition for early spring planting.

Winter protection usually consists in mulching the roots of perennials, bulbs and such to prevent too sudden changes in soil temperature; and protecting above ground stems from the excessive drying out of our warm sunny winter days. Mulching may be of peat, compost, manure, hay, straw or leaves. It is better not to put it on too heavy at first. The leaves which the fall winds blow around naturally will usually be sufficient until after the ground is frozen. Then more may be added, being careful to avoid matting down. Some brush under the leaves will prevent their smothering the plants under them, and some brush or evergreen boughs over them will keep most of them in place. Prevent the excessive drying out of tender stems such as climbing roses, young linden and mountain ash trees and half hardy shrubs, by partially shading them. Evergreen boughs are about the right kind of protection, but wrapping with burlap is sometimes valuable.

Tender tea roses require a special kind of winter protection. The best treatment is to mound a bushel or so of good soil from the annual bed around each plant late in fall after they are thoroughly dormant. Pulling the necessary soil from between the plants is liable to expose the roots too much. When winter really sets in let the leaves fill in the spaces between the mounds of soil or throw in some straw or compost. By spring the plants will have usually died down to the soil level so cut them back now or in spring as is most convenient.

Water sparingly in fall when the plants are ripening up, then when they are entirely dormant and before the ground freezes solid BE SURE that the ground is THOROUGHLY soaked. This will help to prevent "fall kill" which is usually a large proportion of the damage charged to "winter kill."

If necessary to mow lawns any more, raise the mower to leave the grass as long as possible, and let the clippings fall whenever possible. This will help to mulch the lawn, tending to keep in the moisture and preventing too sudden changes in soil temperature during our erratic winters. Lawns may need water several times during the winter if there are several weeks without much rain or snow.

Any time, in fall or spring, after the plants are dormant (have shed their leaves) until they start to leaf again; and the temperature is well above freezing; and there is not too much wind; is the time to spray for scale insects. A miscible oil or lime sulphur is usually used, and must be in the right solution. If too rich it may burn or kill plants and if too weak will not kill the scale. Look especially for oyster shell scale on lilacs, dogwood, cotoneaster, ash and cottonwood; pine scale on pine and spruce; and especially elm scale on all elm.