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Asa Gray.

THE whole civilized world is mourning the death of Asa Gray with a depth of feeling and appreciation perhaps never accorded before to a scholar and man of science.

To the editors of this Journal the loss at the very outset of their labors is serious indeed. They lose a wise and sympathetic adviser of great experience and mature judgment to whom they could always have turned with entire freedom and in perfect confidence; and they lose a contributor whose vast stores of knowledge and graceful pen might, it was reasonable to hope, have long enriched their columns.

The career of Asa Gray is interesting from many points of view. It is the story of the life of a man born in humble circumstances, without the advantages of early education, without inherited genius—for there is no trace in his yeoman ancestry of any germ of intellectual greatness—who succeeded in gaining through native intelligence, industry and force of character, a position in the very front rank of the scientific men of his age. Among the naturalists who, since Linnæus, have devoted their lives to the description and classification of plants, four or five stand out prominently in the character and importance of their work. In this little group Asa Gray has fairly won for himself a lasting position. But he was something more than a mere systematist. He showed himself capable of drawing broad philosophical conclusions from the dry facts he collected and elaborated with such untiring industry and zeal. This power of comprehensive generalization he showed in his paper upon the "Characters of Certain New Species of Plants Collected in Japan" by Charles Wright, published nearly thirty years ago. Here he first pointed out the extraordinary similarity between the Floras of Eastern North America and Japan, and then explained the peculiar distribution of plants through the northern hemisphere by tracing their

direct descent through geological eras from ancestors which flourished in the arctic regions down to the latest tertiary period. This paper was Professor Gray's most remarkable and interesting contribution to science. It at once raised him to high rank among philosophical naturalists and drew the attention of the whole scientific world to the Cambridge botanist.

Asa Gray did not devote himself to abstract science alone; he wrote as successfully for the student as for the professional naturalist. His long list of educational works have no equals in accuracy and in beauty and compactness of expression. They have had a remarkable influence upon the study of botany in this country during the half century which has elapsed since the first of the series appeared.

Botany, moreover, did not satisfy that wonderful intellect, which hard work only stimulated but did not weary, and one of Asa Gray's chief claims to distinction is the prominent and commanding position he took in the great intellectual and scientific struggle of modern times, in which, almost alone and single handed he bore in America the brunt of the disbelief in the Darwinian theory shared by most of the leading naturalists of the time.

But the crowning labor of Asa Gray's life was the preparation of a descriptive work upon the plants of North America. This great undertaking occupied his attention and much of his time during the last forty years of his life. Less fortunate than his greatest botanical contemporary, George Bentham, who turned from the last page of corrected proof of his work upon the genera of plants to the bed from which he was never to rise again, Asa Gray's great work is left unfinished. The two volumes of the "Synoptical Flora of North America" will keep his memory green, however, as long as the human race is interested in the study of plants.

But his botanical writings and his scientific fame are not the most valuable legacy which Asa Gray has left to the American people. More precious to us is the example of his life in this age of grasping materialism. It is a life that teaches how industry and unselfish devotion to learning can attain to the highest distinction and the most enduring fame. Great as were his intellectual gifts, Asa Gray was greatest in the simplicity of his character and in the beauty of his pure and stainless life.

It is with genuine regret that we read the announcement of the discontinuance of the *Gardener's Monthly*. It is like reading of the death of an old friend. Ever since we have been interested in the cultivation of flowers we have looked to the *Monthly* for inspiration and advice, and its pages have rarely been turned without finding the assistance we stood in need of. But, fortunately, the *Gardener's Monthly*, and its modest and accomplished editor, Mr. Thomas Meehan, were one and the same thing. It is Mr. Meehan's long editorial experience, high character, great learning and varied practical knowledge, which made the *Gardener's Monthly* what it was. These, we are happy to know, are not to be lost to us, as Mr. Meehan will, in a somewhat different field and with new associates, continue to delight and instruct the horticultural public.

Americans who visit Europe cannot fail to remark that in the parks and pleasure grounds of the Continent no coniferous tree is more graceful when young or more dignified at maturity than our White Pine. The notes of Dr. Mayr, of the Bavarian Forest Academy, in another column, testify that it holds a position of equal importance as a forest tree for economic planting. It thrives from Northern Germany to Lombardy, corresponding with a range of climate in this country from New England to Northern Georgia. It needs bright sunshine, however, and perhaps it is for lack of this that so few good specimens are seen in England. It was among the first of our trees to be introduced there, but it has been universally pronounced an indifferent grower.

The Forests of the White Mountains.

NEW HAMPSHIRE is not a peculiarly wealthy State, but it has some resources scarcely equaled by those of any of its sisters. The White Mountains, though worth little to the farmer, are a piece of real estate which yields a sure and abundant income by attracting tourists and their money; and this revenue is certain to increase, unless blind mismanagement interposes. The White Mountains are at present unique objects of attraction; but they may easily be spoiled, and the yearly tide of tourists will thus be turned towards other points of interest whose owners have had more sense and foresight.

These mountains owe three-fourths of their charms to the primeval forest that still covers them. Speculators have their eyes on it, and if they are permitted to work their will the State will find a most productive piece of property sadly fallen in value. If the mountains are robbed of their forests they will become like some parts of the Pyrenees, which, though much higher, are without interest, because they have been stripped bare.

The forests of the White Mountains have a considerable commercial value, and this value need not be sacrificed. When lumber speculators get possession of forests they generally cut down all the trees and strip the land at once, with an eye to immediate profit. The more conservative, and, in the end, the more profitable management, consists in selecting and cutting out the valuable timber when it has matured, leaving the younger growth for future use. This process is not very harmful to the landscape. It is practiced extensively in Maine, where the art of managing forests with a view to profit is better understood than elsewhere in this country. A fair amount of good timber may thus be drawn from the White Mountains, without impairing their value as the permanent source of a vastly greater income from the attraction they will offer to an increasing influx of tourists. At the same time the streams flowing from them, and especially the Pemigewasset, a main source of the Merrimac, will be saved from the alternate droughts and freshets to which all streams are exposed that take their rise in mountains denuded of forests. The subject is one of the last importance to the mill owners along these rivers.

F. Parkman.

Landscape Gardening.—A Definition.

SOME of the Fine Arts appeal to the ear, others to the eye. The latter are the Arts of Design, and they are usually named as three—Architecture, Sculpture and Painting. A man who practices one of these in any of its branches is an artist; other men who work with forms and colors are at the best but artisans. This is the popular belief. But in fact there is a fourth art which has a right to be rated with the others, which is as fine as the finest, and which demands as much of its professors in the way of creative power and executive skill as the most difficult. This is the art whose purpose it is to create beautiful compositions upon the surface of the ground.

The mere statement of its purpose is sufficient to establish its rank. It is the effort to produce organic beauty—to compose a beautiful whole with a number of related parts—which makes a man an artist; neither the production of a merely useful organism nor of a single beautiful detail suffices. A clearly told story or a single beautiful word is not a work of art—only a story told in beautifully connected words. A solidly and conveniently built house, if it is nothing more, is not a work of architecture, nor is an isolated stone, however lovely in shape and surface. A delightful tint, a graceful line, does not make a picture; and though the painter may reproduce ugly models he must put some kind of beauty into the reproduction if it is to be esteemed above any other manufactured article—if not beauty of form, then beauty of color or of meaning or at least of execution. Similarly, when a man

disposes the surface of the soil with an eye to crops alone he is an agriculturist; when he grows plants for their beauty as isolated objects he is a horticulturist; but when he disposes ground and plants together to produce organic beauty of effect, he is an artist with the best.

Yet though all the fine arts are thus akin in general purpose they differ each from each in many ways. And in the radical differences which exist between the landscape-gardener's and all the others we find some reasons why its affinity with them is so commonly ignored. One difference is that it uses the same materials as nature herself. In what is called "natural" gardening it uses them to produce effects which under fortunate conditions nature might produce without man's aid. Then, the better the result, the less likely it is to be recognized as an artificial—artistic—result. The more perfectly the artist attains his aim, the more likely we are to forget that he has been at work. In "formal" gardening, on the other hand, nature's materials are disposed and treated in frankly unnatural ways; and then—as a more or less intelligent love for natural beauty is very common to-day, and an intelligent eye for art is rare—the artist's work is apt to be resented as an impertinence, denied its right to its name, called a mere contorting and disfiguring of his materials.

Again, the landscape-gardener's art differs from all others in the unstable character of its productions. When surfaces are modeled and plants arranged, nature and the artist must work a long time together before the true result appears; and when once it has revealed itself, day to day attention will be forever needed to preserve it from the deforming effects of time. It is easy to see how often neglect or interference must work havoc with the best intentions, how often the passage of years must travesty or destroy the best results, how rare must be the cases in which a work of landscape art really does justice to its creator.

Still another thing which affects popular recognition of the art as such is our lack of clearly understood terms by which to speak of it and of those who practice it. "Gardens" once meant pleasure-grounds of every kind and "gardener" then had an adequately artistic sound. But as the significance of the one term has been gradually specialized, so the other has gradually come to denote a mere grower of plants. "Landscape gardener" was a title first used by the artists of the eighteenth century to mark the new tendency which they represented—the search for "natural" as opposed to "formal" beauty; and it seemed to them to need an apology as savoring, perhaps, of grandiloquence or conceit. But as taste declined in England it was assumed by men who had not the slightest right, judged either by their aims or by their results, to be considered artists; and to-day it is fallen into such disesteem that it is often replaced by "landscape architect." This title has French usage to support it and is in many respects a good one. But its correlative—"landscape architecture"—is unsatisfactory; and so, on the other hand, is "landscape artist," though "landscape art" is an excellent generic term. Perhaps the best we can do is to keep to "landscape gardener," and try to remember that it ought always to mean an artist and an artist only.

M. G. van Rensselaer.

Floriculture in the United States.

AT the beginning of the present century, it is not probable that there were 100 florists in the United States, and their combined green-house structures could not have exceeded 50,000 square feet of glass. There are now more than 10,000 florists distributed through every State and Territory in the Union and estimating 5,000 square feet of glass to each, the total area would be 50,000,000 feet, or about 1,000 acres of green-houses. The value of the bare structures, with heating apparatus, at 60 cents per square foot would be \$30,000,000, while the stock of plants grown in them would not be less than

twice that sum. The present rate of growth in the business is about 25% per annum, which proves that it is keeping well abreast of our most flourishing industries.

The business, too, is conducted by a better class of men. No longer than thirty years ago it was rare to find any other than a foreigner engaged in commercial floriculture. These men had usually been private gardeners, who were mostly uneducated, and without business habits. But to-day, the men of this calling compare favorably in intelligence and business capacity with any mercantile class.

Floriculture has attained such importance that it has taken its place as a regular branch of study in some of our agricultural colleges. Of late years, too, scores of young men in all parts of the country have been apprenticing themselves to the large establishments near the cities, and already some of these have achieved a high standing; for the training so received by a lad from sixteen to twenty, better fits him for the business here than ten years of European experience, because much of what is learned there would prove worse than useless here. The English or German florist has here to contend with unfamiliar conditions of climate and a manner of doing business that is novel to him. Again he has been trained to more deliberate methods of working, and when I told the story a few years ago of a workman who had potted 10,000 cuttings in two inch pots in ten consecutive hours, it was stigmatized in nearly every horticultural magazine in Europe as a piece of American bragging. As a matter of fact this same workman two years later, potted 11,500 plants in ten hours, and since then several other workmen have potted plants at the rate of a thousand per hour all day long.

Old world conservatism is slow to adopt improvements. The practice of heating by low pressure steam will save in labor, coal and construction one-fifth of the expense by old methods, and nearly all the large green-house establishments in this country, whether private or commercial, have been for some years furnished with the best apparatus. But when visiting London, Edinburgh and Paris in 1885, I neither saw nor heard of a single case where steam had been used for green-house heating. The stress of competition here has developed enterprise, encouraged invention and driven us to rapid and prudent practice, so that while labor costs at least twice as much as it does in Europe, our prices both at wholesale and retail, are lower. And yet I am not aware that American florists complain that their profits compare unfavorably with those of their brethren over the sea.

Commercial floriculture includes two distinct branches, one for the production of flowers and the other for the production of plants. During the past twenty years the growth in the flower department of the business has outstripped the growth of the plant department. The increase in the sale of Rosebuds in winter is especially noteworthy. At the present time it is safe to say that one-third of the entire glass structures in the United States are used for this purpose; many large growers having from two to three acres in houses devoted to Roses alone, such erections costing from \$50,000 to \$100,000 each, according to the style in which they are built.

More cut flowers are used for decoration in the United States than in any other country, and it is probable that there are more flowers sold in New York than in London with a population four times as great. In London and Paris, however, nearly every door-yard and window of city and suburb show the householder's love for plants, while with us, particularly in the vicinity of New York (Philadelphia and Boston are better), the use of living plants for home decoration is far less general.

There are fashions in flowers, and they continually change. Thirty years ago thousands of Camellia flowers were retailed in the holiday season for \$1 each, while Rosebuds would not bring a dime. Now, many of the fancy Roses sell at \$1 each, while Camellia flowers go begging at ten cents. The Chrysanthemum is now rivaling the Rose, as well it may, and no doubt every decade will see

the rise and fall of some floral favorite. But beneath these flitting fancies is the substantial and unchanging love of flowers that seems to be an original instinct in man, and one that grows in strength with growing refinement. Fashion may now and again condemn one flower or another, but the fashion of neglecting flowers altogether will never prevail, and we may safely look forward in the expectation of an ever increasing interest and demand, steady improvement in methods of cultivation, and to new and attractive developments in form, color and fragrance.

Peter Henderson.

How to Make a Lawn.

“A SMOOTH, closely shaven surface of grass is by far the most essential element of beauty on the grounds of a suburban home.” This is the language of Mr. F. J. Scott, and it is equally true of other than suburban grounds. A good lawn then is worth working for, and if it have a substantial foundation, it will endure for generations, and improve with age.

We take it for granted that the drainage is thorough, for no one would build a dwelling on water soaked land. No labor should be spared in making the soil deep, rich and fine in the full import of the words, as this is the stock from which future dividends of joy and satisfaction are to be drawn. Before grading, one should read that chapter of Downing's on “The Beauty in Ground.” This will warn against terracing or leveling the whole surface, and insure a contour with “gentle curves and undulations,” which is essential to the best effects.

If the novice has read much of the conflicting advice in books and catalogues, he is probably in a state of bewilderment as to the kind of seed to sow. And when that point is settled it is really a difficult task to secure pure and living seeds of just such species as one orders. Rarely does either seller or buyer know the grasses called for, especially the finer and rarer sorts; and more rarely still does either know their seeds. The only safe way is to have the seeds tested by an expert. Mr. J. B. Olcott, in a racy article in the “Report of the Connecticut Board of Agriculture for 1886,” says, “Fifteen years ago nice people were often sowing timothy, red top and clover for door-yards, and failing wretchedly with lawn-making, while seedsmen and gardeners even disputed the identity of our June grass and Kentucky blue-grass.”

We have passed beyond that stage of ignorance, however; and to the question what shall we sow, Mr. Olcott replies: “Rhode Island bent and Kentucky blue-grass are their foolish trade names, for they belong no more to Kentucky or Rhode Island than to other Northern States. Two sorts of fine *Agrostis* are honestly sold under the trade name of Rhode Island bent, and, as trade goes, we may consider ourselves lucky if we get even the coarser one. The finest—a little the finest—*Agrostis canina*—is a rather rare, valuable, and elegant grass, which should be much better known by grass farmers, as well as gardeners, than it is. These are both good lawn as well as pasture grasses.” The grass usually sold as Rhode Island bent is *Agrostis vulgaris*, the smaller red top of the East and of Europe. This makes an excellent lawn. *Agrostis canina* has a short, slender, projecting awn from one of the glumes; *Agrostis vulgaris* lacks this projecting awn. In neither case have we in mind what Michigan and New York people call red top. This is a tall, coarse native grass often quite abundant on low lands, botanically *Agrostis alba*.

Sow small red top or Rhode Island bent, and June grass (Kentucky blue grass, if you prefer that name), *Poa pratensis*. If in the chaff, sow in any proportion you fancy, and in any quantity up to four bushels per acre. If evenly sown, less will answer, but the thicker it is sown the sooner the ground will be covered with fine green grass. We can add nothing else that will improve this mixture, and either alone is about as good as both. A little white clover or sweet vernal grass or sheep's fescue may be added, if you fancy them, but they will not improve the appearance of the lawn. Roll the ground after seeding. Sow the seeds in September or in March or April, and under no circumstance yield to the advice to sow a little oats or rye to “protect the young grass.” Instead of protecting, they will rob the slender grasses of what they most need.

Now wait a little. Do not be discouraged if some ugly weeds get the start of the numerous green hairs which slowly follow. As soon as there is anything to be cut, of weeds or grass, mow closely, and mow often, so that nothing need be raked from the ground. As Olcott puts it, “Leave one crop where it belongs

for home consumption. The rains will wash the soluble substance of the wilted grass into the earth to feed the growing roots." During succeeding summers as the years roll on, the lawn should be perpetually enriched by the leaching of the short leaves as they are often mown. Neither leave a very short growth nor a very heavy growth for winter. Experience alone must guide the owner. If cut too closely, some of it may be killed or start too late in spring; if left too high during winter, the dead long grass will be hard to cut in spring and leave the stubble unsightly. After passing through one winter the annual weeds will have perished and leave the grass to take the lead. Perennial weeds should be faithfully dug out or destroyed in some way.

Every year, add a top dressing of some commercial fertilizer or a little finely pulverized compost which may be brushed in. No one will disfigure his front yard with coarse manure spread on the lawn for five months of the year.

If well made, a lawn will be a perpetual delight as long as the proprietor lives, but if the soil is thin and poor, or if the coarser grasses and clovers are sown instead of those named, he will be much perplexed, and will very likely try some expensive experiments, and at last plow up, properly fit the land and begin over again. This will make the cost and annoyance much greater than at first, because the trees and shrubs have already filled many portions of the soil. A small piece, well made and well kept, will give more satisfaction than a larger plot of inferior turf.

W. J. Beal.

Horticultural Exhibitions in London.

At a late meeting of the floral committee of the Royal Horticultural Society at South Kensington among many novelties was a group of seedling bulbous *Calanthes* from the garden of Sir Trevor Lawrence, who has devoted much attention to these plants and has raised some interesting hybrids. About twenty kinds were shown, ranging in color from pure white to deep crimson. The only one selected for a first-class certificate was *C. sanguinaria*, with flowers similar in size and shape to those of *C. Veitchii*, but of an intensely deep crimson. It is the finest yet raised, surpassing *C. Sedeni*, hitherto unequalled for richness of color. The pick of all these seedlings would be *C. sanguinaria*, *C. Veitchii splendens*, *C. lactea*, *C. nivea*, and *C. porphyrea*. The adjectives well describe the different tints of each, and they will be universally popular when once they find their way into commerce.

Cypripedium Leeantum maculatum, also shown by Sir Trevor Lawrence, is a novelty of sterling merit. The original *C. Leeantum*, which is a cross between *C. Spicerianum* and *C. insigne Maulei*, is very handsome, but this variety eclipses it, the dorsal sepal of the flower being quite two and one-half inches broad, almost entirely white, heavily and copiously spotted with purple. It surpasses also *C. Leeantum superbum*, which commands such high prices. I saw a small plant sold at auction lately for fifteen guineas and the nursery price is much higher.

Lælia anceps Schröderæ is the latest addition to the now very numerous list of varieties of the popular *L. anceps*. This new form, to which the committee with one accord gave a first class certificate, surpasses in my opinion all the colored varieties, with the possible exception of the true old *Barkeri*. The flowers are of the average size and ordinary form. The sepals are rose pink, the broad sepals very light, almost white in fact, while the labellum is of the deepest and richest velvety crimson imaginable. The golden tipped crest is a veritable beauty spot, and the pale petals act like a foil to show off the splendor of the lip.

Two new Ferns of much promise received first class certificates. One named *Pteris Claphamensis* is a chance seedling and was found growing among a lot of other sporelings in the garden of a London amateur. As it partakes of the characters of both *P. tremula* and *P. serrulata*, old and well known ferns, it is supposed to be a natural cross between these. The new plant is of tufted growth, with a dense mass of fronds about six inches long, elegantly cut and gracefully recurved on all sides of the pot. It is looked upon by specialists as just the sort of plant that will take in the market. The other certificated fern, *Adiantum Reginae*, is a good deal like *A. Victoria* and is supposed to be a sport from it. But *A. Reginae*, while it has broad pinnæ of a rich emerald green like *A. Victoria*, has fronds from nine to twelve inches long, giving it a lighter and more elegant appearance. I don't know that the *Victoria* Maidenhair is grown in America yet, but I am sure those who do floral decorating will welcome it as well as the newer *A. Reginae*. A third Maidenhair of a similar character is *A. rhodophyllum* and these form a trio that will become the standard

kinds for decorating. The young fronds of all three are of a beautiful coppery red tint, the contrast of which with the emerald green of the mature fronds is quite charming. They are warm green-house ferns and of easy culture, and are supposed to be hybrid forms of the old *A. scutum*.

Nerine Mansellii, a new variety of the Guernsey Lily, was one of the loveliest flowers at the show. From the common Guernsey Lily it differs only in color of the flowers. These have crimped-edged petals of clear rose tints; and the umbel of flowers is fully six inches across, borne on a stalk eighteen inches high. These Guernsey Lilies have of recent years come into prominence in English gardens since so many beautiful varieties have been raised, and as they flower from September onward to Christmas they are found to be indispensable for the green-house, and indoor decoration. The old *N. Fothergillii major*, with vivid scarlet-crimson flowers and crystalline cells in the petals which sparkle in the sunlight like myriads of tiny rubies, remains a favorite among amateurs. Baron Schroeder, who has the finest collection in Europe, grows this one only in quantity. An entire house is filled with them, and when hundreds of spikes are in bloom at once, the display is singularly brilliant.

A New Vegetable, a Japanese plant called Choro-Gi, belonging to the Sage family, was exhibited. Its botanical name is *Stachys tuberosa* and it was introduced first to Europe by the Vilmorins of Paris under the name of *Crosnes du Japon*. The edible part of the plant is the tubers, which are produced in abundance on the tips of the wiry fibrous roots. These are one and a half inches long, pointed at both ends, and have prominent raised rings. When washed they are as white as celery and when eaten raw taste somewhat like Jerusalem artichokes, but when cooked are quite soft and possess the distinct flavor of boiled chestnuts. A dish of these tubers when cooked look like a mass of large caterpillars, but the Committee pronounced them excellent, and no doubt this vegetable will now receive attention from some of our enterprising seedsmen and may become a fashionable vegetable because new and unlike any common kind. The tubers were shown now for the first time in this country by Sir Henry Thompson, the eminent surgeon. The plant is herbaceous, dying down annually leaving the tubers, which multiply very rapidly. They can be dug at any time of the year, which is an advantage. The plant is perfectly hardy here and would no doubt be so in the United States, as it remains underground in winter. [A figure of this plant with the tubers appeared in the *Gardener's Chronicle*, January 7th, 1888.—Ed.]

Phalænopsis F. L. Ames, a hybrid moth orchid, the result of intercrossing *P. grandiflora* of Lindley with *P. intermedia Portei* (itself a natural hybrid between the little *P. rosea* and *P. amabilis*), was shown at a later exhibition. The new hybrid is very beautiful. It has the same purplish green leaves as *P. amabilis*, but much narrower. The flower spikes are produced in the same way as those of *P. grandiflora*, and the flowers in form and size resemble those of that species, but the coloring of the labellum is more like that of its other parent. The sepals and petals are pure white, the latter being broadest at the lips. The labellum resembles that of *P. intermedia*, being three-lobed, the lateral lobes are erect, magenta purple in color and freckled. The middle or triangular lobe is of the same color as the lateral lobes, but pencilled with longitudinal lines of crimson, flushed with orange, and with the terminal cirrhi of a clear magenta. The column is pink, and the crest is adorned with rosy speckles. The Floral Committee unanimously awarded a first-class certificate of merit to the plant.

A New *Lælia* named *L. Gouldiana* has had an eventful history. The representative of Messrs. Sander, of St. Albans, the great orchid importers, while traveling in America saw it blooming in New York, in the collection of Messrs. Siebrecht & Wadley, and noting its distinctness and beauty bought the stock of it. The same week another new *Lælia* flowered in England and was sent up to one of the London auction rooms for sale. As it so answered the description of the American novelty which Messrs. Sander had just secured it was bought for the St. Albans collection, and now it turns out that the English novelty and the American novelty are one and the same thing, and a comparison of dates shows that they flowered on the same day, although in different hemispheres. As, however, it was first discovered in the United States, it is intended to call it an American orchid, and that is why Mr. Jay Gould has his name attached to it. In bulb and leaf the novelty closely resembles *L. albida*, and in flower both *L. anceps* and *L. autumnalis*. The flowers are as large as those of an average form of *L. anceps*, the sepals are rather narrow, the petals as broad as those of *L.*



Fig. 1.—Chrysanthemum—Mrs. Alpheus Hardy.

anceps Dawsoni, and both petals and sepals are of a deep rose pink, intensified at the tips as if the color had collected there and was dripping out. The tip is in form between that of *L. anceps* and *L. autumnalis* and has the prominent ridges of the latter, while the color is a rich purple crimson. The black viscid pubescence, always seen on the ovary of *L. autumnalis*, is present on that of *L. Gouldiana*. The plants I saw in the orchid nursery at St. Albans lately, bore several spikes, some having three or four flowers. Those who have seen it are puzzled about its origin, some considering it a hybrid between *L. anceps* and *L. autumnalis*, others consider it a distinct species and to the latter opinion I am inclined. Whatever its origin may be, it is certain we have a charming addition to midwinter flowering orchids.

W. Goldring.

London, February 1st,

A New Departure in Chrysanthemums.

THE Chrysanthemum of which the figure gives a good representation is one of a collection of some thirty varieties lately sent from Japan to the lady for whom it has been named. Mrs. Alpheus Hardy of Boston, by a young Japanese once a protégé of hers, but now returned as a teacher to his native country. As may be seen, it is quite distinct from any variety known in this country or Europe, and the Japanese botanist Miyabe, who saw it at Cambridge, pronounces it a radical departure from any with which he is acquainted.

The photograph from which the engraving was made was taken just as the petals had begun to fall back from the centre, showing to good advantage the peculiarities of the variety.

The flower is of pure white, with the firm, long and broad petals strongly incurved at the extremities. Upon the back of

outer surface of this incurved portion will be found, in the form of quite prominent hairs, the peculiarity which makes this variety unique.

These hairs upon close examination are found to be a glandular outgrowth of the epidermis of the petals, multicellular in structure and with a minute drop of a yellow resinous substance at the tip. The cells at first conform to the wavy character of those of the epidermis, but gradually become prismatic with straight walls, as shown in the engraving of one of the hairs, which was made from a drawing furnished by Miss Grace Cooley, of the Department of Botany at Wellesley College, who made a microscopic investigation of them.

This is one of those surprises that occasionally make their appearance from Japan. Possibly it is a chance seedling; but since one or two other specimens in the collection are striking in form, and others are distinguished for depth and purity of color, it is more probable that the best of them have been developed by careful selection.

This *Chrysanthemum* was exhibited at the Boston Chrysanthemum Show last December by Edwin Fewkes & Son of Newton Highlands, Mass.

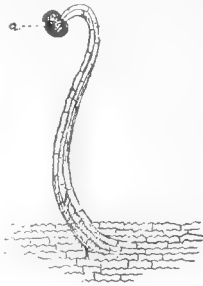


Fig. 2.—Hair from Petal of *Chrysanthemum*, much enlarged. *a*—resin drop. *b*—epidermis of petal with wavy cells.

A. H. Fewkes.

New Plants from Afghanistan.

Arnebia cornuta.—This is a charming novelty, an annual, native of Afghanistan. The little seedling with lancet-like hairy, dark green leaves, becomes presently a widely branching plant two feet in diameter and one and one-half feet high. Each branch and branchlet is terminated by a lengthening raceme of flowers. These are in form somewhat like those of an autumnal Phlox, of a beautiful deep golden yellow color, adorned and brightened up by five velvety black blotches. These blotches soon become coffee brown and lose more and more their color, until after three days they have entirely disappeared. During several months the plant is very showy, the fading flowers being constantly replaced by fresh expanding ones. Sown in April in the open border, it needs no care but to be thinned out and kept free from weeds. It must, however, have some soil which does not contain fresh manure.

Delphinium Zalil.—This, also, is a native of Afghanistan, but its character, whether a biennial or perennial, is not yet ascertained. The Afghans call it Zalil and the plant or root is used for dyeing purposes. Some years ago we only knew blue, white and purple larkspurs, and then California added two species with scarlet flowers. The above is of a beautiful sulphur yellow, and, all in all, it is a plant of remarkable beauty. From a rosette of much and deeply divided leaves, rises a branched flower stem to about two feet; each branch and branchlet ending in a beautiful spike of flowers each of about an inch across and the whole spike showing all its flowers open at once. It is likely to become a first rate standard plant of our gardens. To have it in flower the very first year it must be sown very early, say in January, in seed pans, and transplanted later, when it will flower from the end of May until the end of July. Moreover, it can be sown during spring and summer in the open air to flower the following year. It is quite hardy here.

Baden-Baden.

Max Leichtlin.

Iris tenuis.*

THIS pretty delicate species of *Iris*, Fig. 3, is a native of the Cascade Mountains of Northern Oregon. Its long branching rootstocks are scarcely more than a line in thickness, sending up sterile leafy shoots and slender stems about a foot high. The leaves are thin and pale green, rather taller than the stems, sword-shaped and half an inch broad or more. The leaves of the stem are bract-like and distant, the upper one or two subtending slender peduncles. The spathes are short, very thin

**I. TENUIS*, Watson, *Proc. Amer. Acad.*, xvii. 380. Rootstock elongated, very slender (a line thick); leaves thin, ensiform, about equaling the stems, four to eight lines broad; stems scarcely a foot high, 2-3-flowered, with two or three bract-like leaves two or three inches long; lateral peduncles very slender, as long as the bracts; spathes scarious, an inch long; pedicels solitary, very short; flowers small, white marked with yellow and purple; tube two or three lines long; segments oblong-spatulate, the sepals spreading, one and one-half inches long, the petals shorter and emarginate; anthers as long as the filaments; styles with narrow entire crests; capsule oblong-ovate, obtuse, nine lines long

and scarious, and enclose the bases of their rather small solitary flowers, which are "white, lightly striped and blotched with yellow and purple." The sepals and petals are oblong-spatulate, from a short tube, the sepals spreading, the shorter petals erect and notched.

The peculiar habitat of this species doubtless accounts in good measure for its slender habit and mode of growth. Mr. L. F. Henderson, of Portland, Oregon, who discovered it in 1881, near a branch of the Clackamas River called Eagle Creek, about thirty miles from Portland, reports it as growing in the fir forests in broad mats, its very long rootstocks running along near the surface of the ground, just covered by moss or partly decayed fir-needles, with a light addition of soil. This also would indicate the need of special care and treatment in its cultivation. In May, 1884, Mr. Henderson took great pains to procure roots for the Botanic Garden at Cambridge, which were received in good order, but which did not survive the next winter. If taken up, however, later in the season or very early in the spring, it is probable that with due attention to soil and shade there would be little trouble in cultivating it successfully. The accompanying figure is from a drawing by Mr. C. E. Faxon.

Sereno Watson.

Hardy Shrubs for Forcing.

SHRUBS for forcing should consist of early blooming kinds only. The plants should be stocky, young and healthy, well-budded and well-ripened, and in order to have first-class stock they should be grown expressly for forcing. For cut flower purposes only, we can lift large plants of Lilacs, Snowballs, Deutzias, Mock oranges and the like with all the ball of roots we can get to them and plant at once in forcing-houses. But this should not be done before New Year's. We should prepare for smaller plants some months ahead of forcing time, say in the preceding April or August, by lifting them and planting in small pots, tubs or boxes as can conveniently contain their roots, and we should encourage them to root well before winter sets in. Keep them out of doors and plunged till after the leaves drop off; then either mulch them where they are or bring them into a pit, shed or cool cellar, where there shall be no fear of their getting dry, or of having the roots fastened in by frost. Introduce them into the green-house in succession; into a cool green-house at first for a few weeks, then as they begin to start, into a warmer one. From the time they are brought into the green-house till the flowers begin to open give a sprinkling overhead twice a day with tepid water. When they have done blooming, if worth keeping over for another time, remove them to a cool house and thus gradually harden them off, then plant them out in the garden in May, and give them two years' rest.

Shrubs to be forced for their cut flowers only should consist of such kinds as have flowers that look well and keep well after being cut. Among these are *Deutzia gracilis*, common Lilacs of various colors, *Staphyllea Colchica*, *Spiraea Cantonensis* (*Reevesii*) single and double, the Guelder Rose, the Japanese Snowball and *Azalea mollis*. To these may be added some of the lovely double-flowering and Chinese apples, whose snowy or crimson-tinted buds and leafy twigs are very pretty. The several double-flowered forms of *Prunus triloba* are also desirable, but a healthy stock is hard to get. *Andromeda floribunda* and *A. Japonica* set their flower buds the previous summer for the next year's flowers, and are, therefore, like the *Laurestinus*, easily forced into bloom after New Year's. Hardy and half-hardy Rhododendrons with very little forcing may be had in bloom from March.

In addition to the above, for conservatory decoration we may introduce all manner of hardy shrubs. Double flowering peach and cherry trees are easily forced and showy while they last. Clumps of *Pyrus arbutifolia* can easily be had in bloom in March, when their abundance of deep green leaves is an additional charm to their profusion of hawthorn-like flowers. The Chinese *Xanthoceras* is extremely copious and showy, but of brief duration and ill-fitted for cutting. Bushes of yellow Broom and double-flowering golden Furze can easily be had after January. *Fasminum nudiflorum* may be had in bloom from November till April, and Forsythia from January. They look well when trained up to pillars. The early-flowering Clematises may be used to capital advantage in the same way, from February onward. Although the Mahonias flower well, their foliage at blooming time is not always comely. Out-of-doors the American Red-bud makes a handsomer tree than does the Japanese one; but the latter is preferable for green-house work, as the flowers are bright and the smallest plants bloom. The Chinese *Wistaria* blooms as well in the

green-house as it does outside; indeed, if we introduce some branches of an out-door plant into the green-house, we can have it in bloom two months ahead of the balance of the vine still left out-of-doors. Here-about we grow Wistarias as standards, and they bloom magnificently. What a sight a big standard wistaria in the green-house in February would be! Among other shrubs may be mentioned Shadbush, African Tamarix, Daphne of sorts and Exochorda. We have also a good many barely hardy plants that may be wintered well in a cellar or cold pit, and forced into bloom in early spring. Among these are Japanese Privet, Pittosporum, Raphiolepis, Hydrangeas and the like.

And for conservatory decoration we can also use with excellent advantage some of our fine-leaved shrubs, for instance our lovely Japanese Maples and variegated Box Elder.

Glen Cove, N. Y. Wm. Falconer.

Plant Notes.

A Half-hardy Begonia.—When botanizing last September upon the Cordilleras of North Mexico some two hundred miles south of the United States Boundary, I found growing in black mould of shaded ledges—even in the thin humus of mossy rocks—at an elevation of 7,000 to 8,000 feet, a plant of striking beauty, which Mr. Sereno Watson identifies as *Begonia gracilis*, HBK., var. *Martiana*, A. DC. From a small tuberous root it sends up to a height of one to two feet a single crimson-tinted stem, which terminates in a long raceme of scarlet flowers, large for the genus and long enduring. The plant is still further embellished by clusters of scarlet gemmæ in the axils of its leaves. Mr. Watson writes: "It was in cultivation fifty years and more ago, but has probably been long ago lost. It appears to be the most northern species of the genus, and should be the most hardy." Certainly the earth freezes and snows fall in the high region, where it is at home.

Northern Limit of the Dahlia.—In the same district, and at the same elevation, I met with a purple flowered variety of *Dahlia coccinea*, Cav. It was growing in patches under oaks and pines in thin dry soil of summits of hills. In such exposed situations the roots must be subjected to some frost, as much certainly as under a light covering of leaves in a northern garden. The Dahlia has not before been reported, as I believe, from a latitude nearly so high. C. G. Pringle.

Ceanothus is a North American genus, represented in the Eastern States by New Jersey Tea, and Red Root (*C. Americanus* and *C. ovatus*), and in the

West and South-west by some thirty additional species. Several of these Pacific Coast species are quite handsome and well worthy of cultivation where they will thrive. Some of the more interesting of them are figured in different volumes of the *Botanical Magazine*, from plants grown at Kew, and I believe that the genus is held in considerable repute by French gardeners.

In a collection of plants made in Southern Oregon, last spring, by Mr. Thomas Howell, several specimens of *Ceanothus* occur which are pretty clearly hybrids between *C. cuneatus* and *C. prostratus*, two common species of the region. Some have the spreading habit of the latter, their flowers are of the bright blue color characteristic of that species, and borne on slender blue pedicels, in an umbel-like cluster. But while many of their leaves have the abrupt three-toothed apex of *C. prostratus*, all gradations can be found from this form to the spatulate, toothless leaves of *C. cuneatus*. Other specimens have the more rigid habit of the latter species, and their flowers are white or nearly so, on shorter pale pedicels, in usually smaller and denser clusters. On these plants the leaves are commonly those of *C. cuneatus*, but they pass into the truncated and toothed form proper to *C. prostratus*.

According to Focke (*Pflanzenmischlinge*, 1881, p. 99), the French cross one or more of the blue-flowered Pacific Coast species on the hardier New Jersey Tea, a practice that may perhaps be worthy of trial by American gardeners. Have any of the readers of GARDEN AND FOREST ever met with spontaneous hybrids?

W. Trelease.

Wire Netting for Tree Guards.

—On some of the street trees of Washington heavy galvanized wire netting is used to protect the bark from injury by horses. It is the same material that is used for enclosing poultry yards. It comes in strips five or six feet wide, and may be cut to any length required by the size of the tree. The edges are held in place by bending together the cut ends of the wires, and the whole is sustained by staples over the heavy wires at the top and bottom. This guard appears to be an effective protection and is less unsightly than any other of which I know, in fact it can hardly be distinguished at the distance of a few rods. It is certainly an improvement on the plan of white-washing

the trunks, which has been extensively practiced here since the old guards were removed.

A. A. Crozier.



Fig. 3.—*Iris tenuis*.—See page 6.

Artificial Water.

ONE of the most difficult parts of a landscape gardener's work is the treatment of what our grandfathers called "pieces of water" in scenes where a purely natural effect is desired. The task is especially hard when the stream, pond or lake has been artificially formed; for then Nature's processes must be simulated not only in the planting but in the shaping of the shores. Our illustration partially reveals a successful effort of this sort—a pond on a country-seat near Boston.

It was formed by excavating a piece of swamp and damming a small stream which flowed through it. In the distance towards the right the land lies low by the water and gradually rises as it recedes. Opposite us it forms little wooded promontories with grassy stretches between. Where we stand it is higher, and beyond the limits of the picture to the left it forms

suited to their place and in harmony with each other; and all the contours of the shore are gently modulated and softly connected with the water by luxuriant growths of water plants. The witness of the eye alone would persuade us that Nature unassisted had achieved the whole result. But beauty of so suave and perfect a sort as this is never a natural product. Nature's beauty is wilder if only because it includes traces of mutation and decay which here are carefully effaced. Nature suggests the ideal beauty, and the artist realizes it by faithfully working out her suggestions. •

Some New Roses.

THE following list comprises most of the newer Roses that have been on trial to any extent in and about Philadelphia during the present winter:



A Piece of Artificial Water.

a high, steep bank rising to the lawn, on the further side of which stands the house. The base of these elevated banks and the promontories opposite are planted with thick masses of rhododendrons, which flourish superbly in the moist, peaty soil, protected, as they are, from drying winds by the trees and high ground. Near the low meadow a long stretch of shore is occupied by thickets of hardy azaleas. Beautiful at all seasons, the pond is most beautiful in June, when the rhododendrons are ablaze with crimson and purple and white, and when the yellow of the azalea-beds—discreetly separated from the rhododendrons by a great clump of low-growing willows—finds delicate continuation in the buttercups which fringe the daisied meadow. The lifted banks then afford particularly fortunate points of view; for as we look down upon the rhododendrons, we see the opposite shore and the water with its rich reflected colors as over the edge of a splendid frame. No accent of artificiality disturbs the eye despite the unwonted profusion of bloom and variety of color. All the plants are

Puritan (H. T.) is one of Mr. Henry Bennett's seedlings, and perhaps excites more interest than any other. It is a cross between Mabel Morrison and Devoniensis, creamy white in color and a perpetual bloomer. Its flowers have not opened satisfactorily this winter. The general opinion seems to be that it requires more heat than is needed for other forcing varieties. Further trial will be required to establish its merit.

Meteor (H. T., Bennett.)—Some cultivators will not agree with me in classing this among hybrid Teas. In its manner of growth it resembles some Tea Roses, but its coloring and scanty production of buds in winter are indications that there is Hybrid Remontant blood in it. It retains its crimson color after being cut longer than any Rose we have, and rarely shows a tendency to become purple with age, as other varieties of this color are apt to do. For summer blooming under glass it will prove satisfactory. In winter its coloring is a rich velvety crimson, but as the sun gets stronger it assumes a more lively shade.

Mrs. John Laing (H. R., Bennett) is a seedling from Francois Michelon, which it somewhat resembles in habit of growth and color of flower. It is a free bloomer out-of-doors in summer and forces readily in winter. Blooms of it have been offered for sale in the stores here since the first week in December. It is a soft shade of pink in color, with a delicate lilac tint. It promises to become a general favorite, as in addition to the qualities referred to, it is a free autumnal bloomer outside. For forcing it will be tried extensively next winter.

Princess Beatrice (T., Bennett) was distributed for the first time in this country last autumn, but has so far been a disappointment in this city. But some lots arrived from Europe too late and misfortunes befell others, so that the trial can hardly be counted decisive, and we should not hastily condemn it. Some have admired it for its resemblance, in form of flower, to a Madame Cuisin, but its color is not just what we need. In shade it somewhat resembles Sunset, but is not so effective. It may, however, improve under cultivation, as some other Roses have done; so far as I know it has not been tried out-of-doors.

Papa Gontier (H. B., Nabonnaud)—This, though not properly a new rose, is on trial for the first time in this city. It has become a great favorite with growers, retailers and purchasers. In habit it is robust and free blooming, and in coloring, though similar to Bon Silene, is much deeper or darker. There seems to be a doubt in some quarters as to whether it blooms as freely as Bon Silene; personally, I think there is not much difference between the two. Gontier is a good Rose for out-door planting.

Edwin Lonsdale.

Two Ferns and their Treatment.

Adiantum Farleyense.—This beautiful Maidenhair is supposed to be a subfertile, plumose form of *A. tenerum*, which much resembles it, especially in a young state. For decorative purposes it is almost unrivaled, whether used in pots or for trimming baskets of flowers or bouquets. It prefers a warm, moist house and delights in abundant water. We find it does best when potted firmly in a compost of two parts loam to one of peat, and with a good sprinkling of sifted coalashes. In this compost it grows very strong, the fronds attaining a deeper green and lasting longer than when grown in peat. When the pots are filled with roots give weak liquid manure occasionally. This fern is propagated by dividing the roots and potting in small pots, which should be placed in the warmest house, where they soon make fine plants. Where it is grown expressly for cut fronds the best plan is to plant it out on a bench in about six inches of soil, taking care to give it plenty of water and heat, and it will grow like a weed.

Actinopteris radiata.—A charming little fern standing in a genus by itself. In form it resembles a miniature fan palm, growing about six inches in height. It is generally distributed throughout the East Indies. In cultivation it is generally looked upon as poor grower, but with us it grows as freely as any fern we have. We grow a lot to mix in with Orchids, as they do not crowd at all. We pot in a compost of equal parts loam and peat with a few ashes to keep it open, and grow in the warmest house, giving at all times abundance of water both at root and overhead. It grows very freely from spores, and will make good specimens in less than a year. It is an excellent Fern for small baskets.

F. Goldring.

Timely Hints About Bulbs.

SPRING flowering bulbs in-doors, such as the Dutch Hyacinths, Tulips and the many varieties of Narcissus, should now be coming rapidly into bloom. Some care is required to get well developed specimens. When first brought in from cold frames or wherever they have been stored to make roots, do not expose them either to direct sunlight or excessive heat.

A temperature of not more than fifty-five degrees at night is warm enough for the first ten days, and afterwards, if they show signs of vigorous growth and are required for any particular occasion, they may be kept ten degrees warmer. It is more important that they be not exposed to too much light than to too much heat.

Half the short stemmed Tulips, dumpy Hyacinths and blind Narcissus we see in the green-houses and windows of amateurs are the result of excessive light when first brought into warm quarters. Where it is not possible to shade bulbs without interfering with other plants a simple and effective plan is to make funnels of paper large enough to stand inside each pot and six inches high. These may be left on the pots night and day from the time the plants are brought in until the flower spike has grown above the foliage; indeed, some of the very finest Hyacinths cannot be had in perfection without some

such treatment. Bulbous plants should never suffer for water when growing rapidly, yet on the other hand, they are easily ruined if allowed to become sodden.

When in flower a rather dry and cool temperature will preserve them the longest.

Of bulbs which flower in the summer and fall, Gloxinias and tuberous rooted Begonias are great favorites and easily managed. For early summer a few of each should be started at once—using sandy, friable soil. Six-inch pots, well drained, are large enough for the very largest bulbs, while for smaller even three-inch pots will answer. In a green-house there is no difficulty in finding just the place to start them. It must be snug, rather shady and not too warm. They can be well cared for, however, in a hot-bed or even a window, but some experience is necessary to make a success.

Lilies, in pots, whether *L. candidum* or *L. longiflorum* that are desired to be in flower by Easter, should now receive every attention—their condition should be that the flower buds can be easily felt in the leaf heads. A temperature of fifty-five to sixty-five at night should be maintained, giving abundance of air on bright sunny days to keep them stocky. Green fly is very troublesome at this stage, and nothing is more certain to destroy this pest than to dip the plants in tobacco water which, to be effective, should be the color of strong tea. Occasional waterings of weak liquid manure will be of considerable help if the pots are full of roots.

J. Thorpe.

Entomology.

Arsenical Poisons in the Orchard.

AS is well known, about fifty per cent. of the possible apple crop in the Western States is sacrificed each year to the codling moth, except in sections where orchardists combine to apply bands of straw around the trunks. But as is equally well known this is rather a troublesome remedy. At all events, in Illinois, Professor Forbes, in a bulletin lately issued from the office of the State Entomologist of Illinois, claims that the farmers of that State suffer an annual loss from the attacks of this single kind of insect of some two and three-quarters millions of dollars.

As the results of two years' experiments in spraying the trees with a solution of Paris green, only once or twice in early spring, before the young apples had drooped upon their stems, there was a saving of about seventy-five per cent. of the apples.

The Paris green mixture consisted of three-fourths of an ounce of the powder by weight, of a strength to contain 15.4 per cent. of metallic arsenic, simply stirred up in two and a half gallons of water. The tree was thoroughly sprayed with a hand force-pump, and with the deflector spray and solid jet-hose nozzle, manufactured in Lowell, Mass. The fluid was thrown in a fine mist-like spray, applied until the leaves began to drip.

The trees were sprayed in May and early in June while the apples were still very small. It seems to be of little use to employ this remedy later in the season, when later broods of the moth appear, since the poison takes effect only in case it reaches the surface of the apple between the lobes of the calyx, and it can only reach this place when the apple is very small and stands upright on its stem. It should be added that spraying "after the apples have begun to hang downward is unquestionably dangerous," since even heavy winds and violent rains are not sufficient to remove the poison from the fruit at this season.

At the New York Experimental Station last year a certain number of trees were sprayed three times with Paris green with the result that sixty-nine per cent. of the apples were saved.

It also seems that last year about half the damage that might have been done by the Plum weevil or curculio was prevented by the use of Paris green, which should be sprayed on the trees both early in the season, while the fruit is small, as well as later.

The cost of this Paris green application, when made on a large scale, with suitable apparatus, only once or twice a year, must, says Mr. Forbes, fall below an average of ten cents a tree.

The use of solutions of Paris green or of London purple in water, applied by spraying machines such as were invented and described in the reports of the national Department of Agriculture by the U. S. Entomologist and his assistants, have effected a revolution in remedies against orchard and forest insects. We expect to see them, in careful hands, tried with equal success in shrubberies, lawns and flower gardens.

A. S. Packard.

The Forest.

The White Pine in Europe.

THE White Pine was among the very first American trees which came to Europe, being planted in the year 1705 by Lord Weymouth on his grounds in Chelsea. From that date, the tree has been cultivated in Europe under the name of Weymouth Pine; in some mountain districts of northern Bavaria, where it has become a real forest tree, it is called Strobe, after the Latin name *Pinus strobus*. After general cultivation as an ornamental tree in parks this Pine began to be used in the forests on account of its hardiness and rapid growth, and it is now not only scattered through most of the forests of Europe, but covers in Germany alone an area of some 300 acres in a dense, pure forest. Some of these are groves 120 years old, and they yield a large proportion of the seed demanded by the increasing cultivation of the tree in Europe.

The White Pine has proved so valuable as a forest tree that it has partly overcome the prejudices which every foreign tree has to fight against. The tree is perfectly hardy, is not injured by long and severe freezing in winter, nor by untimely frosts in spring or autumn, which sometimes do great harm to native trees in Europe. On account of the softness of the leaves and the bark, it is much damaged by the nibbling of deer, but it heals quickly and throws up a new leader.

The young plant can endure being partly shaded by other trees far better than any other Pine tree, and even seems to enjoy being closely surrounded, a quality that makes it valuable for filling up in young forests where the native trees, on account of their slow growth, could not be brought up at all.

The White Pine is not so easily broken by heavy snow-fall as the Scotch Pine, on account of the greater elasticity of its wood. The great abundance of soft needles falling from it every year better fits it for improving a worn-out soil than any European Pine, therefore the tree has been tried with success as a nurse for the ground in forest plantations of Oak, when the latter begin to be thinned out by nature, and grass is growing underneath them.

And finally, all observations agree that the White Pine is a faster growing tree than any native Conifer in Europe, except, perhaps, the Larch. The exact facts about that point, taken from investigations on good soil in various parts of Germany, are as follows:

Years.	Height.	Annual Growth During Last Decade.
The White Pine at 20 reaches	7.5 meters.	37 centimeters
" 30 "	12.5 "	50 "
" 40 "	18.5 "	60 "
" 50 "	22.5 "	40 "
" 60 "	26.5 "	40 "
" 70 "	28.5 "	20 "
" 80 "	30.0 "	15 "
" 90 "	32.0 "	20 "

For comparison I add here the average growth on good soil, of the Scotch Pine, one of the most valuable and widely distributed timber trees of Europe.

Years.	Height.	Annual Growth During Last Decade.
The Scotch Pine at 20 reaches	7.3 meters.	36.5 centimeters
" 30 "	11.6 "	43.0 "
" 40 "	15.7 "	41.0 "
" 50 "	19.4 "	37.0 "
" 60 "	22.1 "	27.0 "
" 70 "	24.0 "	22.0 "
" 80 "	26.0 "	17.0 "
" 90 "	27.5 "	15.0 "
" 100 "	28.5 "	10.0 "
" 120 "	30.0 "	7.5 "

That is, the White Pine is ahead of its relative during its entire life and attains at 80 years a height which the Scotch Pine only reaches in 120 years. It appears then

that the whole volume of wood formed within a certain period by an acre of White Pine forest is greater than that yielded by a forest of Scotch Pine within the same period.

As far as reliable researches show, a forest of White Pine when seventy years old gives an annual increment of 3 cords of wood per acre. On the same area a forest of Scotch Pine increases every year by 2.4 cords on the best soil, 2 cords on medium soil, and 1.5 cords on poor soil.

But notwithstanding the splendid qualities which distinguish the White Pine as a forest tree its wood has never been looked upon with favor in Europe. Many of those who are cultivating the White Pine for business seem to expect that they will raise a heavy and durable wood. These are the qualities prized in their own timber trees, and they seem to think that the White Pine must be so highly prized at home for the same qualities, when in fact it is the lightness and softness of the wood which are considered in America. It would seem also that some European planters believe that a Pine tree exists which will yield more and at the same time heavier wood than any other tree on the same area. It is a general rule that the amount of woody substance annually formed on the same soil does not vary in any great degree with the different kinds of trees. For instance, if we have good soil we may raise 2,200 lbs. per acre of woody substance every year, from almost any kind of timber tree. If we plant a tree forming a wood of low specific gravity, we get a large volume of wood, and this is the case with the White Pine. If we plant on the same ground an Oak tree, we will get small volume of wood, but the weight of the woody substance will be the same, that is, 2,200 pounds of absolutely dried wood per acre.

It is remarkable that there is hardly any difference in the specific gravity of the wood of the White Pine grown in Europe and in its native country. I collected in Central Wisconsin wood-sections of a tall tree and compared the specific gravity with the wood of a full-grown tree of White Pine from a Bavarian forest. The average specific gravity of the Bavarian tree was 38.3. The average specific gravity of the American tree was 38.9. In both trees the specific gravity slightly increased from the base to the top. Professor Sargent gives 38 as the result of his numerous and careful investigations.

I was much surprised that the thickness of the sap-wood varied much in favor of the Bavarian tree.

	Of the Bavarian tree.	Of the American tree.
At the base	2.7 centimeters	9 centimeters.
In the middle	.4 "	6 "
Within the crown	.3 "	4 "

I am inclined to believe that on account of the generally drier climate of America a greater amount of water, and, therefore, of water-conducting sap-wood, is necessary to keep the balance between the evaporation and transportation of the water. The wood of the White Pine is certainly better fitted for many purposes than any tree with which nature has provided Europe, and yet one can hardly expect it to easily overcome fixed habits and prejudices. It will devolve upon the more intelligent proprietors of wood-land in Europe to begin with the plantation of the White Pine on a large scale. No Conifer in Europe can be cultivated with so little care and risk as the White Pine; the frost does not injure the young plant, and the numerous insects invading the European trees during their whole life-time inflict but little harm. Subterranean parasites are thinning out the plantations to some extent, but in no dangerous way.

H. Mayr.
Tokio, Japan.

Abies amabilis.--Professor John Macoun detected this species during the past summer upon many of the mountains of Vancouver's Island where with *Tsuga Pattoniana* it is common above 3,000 feet over the sea level. The northern distribution of this species as well as some other British Columbia trees is still a matter of conjecture. It has not been noticed north of the Fraser River, but it is not improbable that *Abies amabilis* will be found to extend far to the north along some of the mountain ranges of the north-west coast.

European Larch in Massachusetts.

IN 1876 the Trustees of the Massachusetts Society for the Promotion of Agriculture offered a premium for the best plantations of not less than five acres of European Larch. The conditions of the competition were that not less than 2,700 trees should be planted to the acre, and that only poor, worn-out land, or that unfit for agricultural purposes, be used in these plantations.

The prize was to be awarded at the end of ten years. The committee appointed to award the prize were C. S. Sargent and John Lowell. The ten years having expired, this Committee lately made the following report :

Mr. James Lawrence, of Groton, and Mr. J. D. W. French, of North Andover, made plantations during the spring of 1877 in competition for this prize. Mr. Lawrence, however, at the end of one year withdrew from the contest, and Mr. French is the only competitor. Your Committee have visited his plantation at different times during the past ten years, and have now made their final inspection. The plantation occupies a steep slope facing the south and covered with a thin coating of gravelly loam largely mixed towards the bottom of the hill with light sand. This field in 1877 was a fair sample of much of the hillside pasture land of the eastern part of the State. It had been early cleared, no doubt, of trees, and the light surface soil practically exhausted by cultivation. It was then used as a pasture, producing nothing but the scantiest growth of native Grasses and Sedges with a few stunted Pitch Pines. Land of this character has no value for tillage, and has practically little value for pasturage. Upon five acres of this land Mr. French planted fifteen thousand European Larch. The trees were one foot high, and were set in the sod four feet apart each way, except along the boundary of the field, where the plantation was made somewhat thicker. The cost of the plantation, as furnished by Mr. French, has been as follows :

15,000 Larch (imported),	\$108 50
Fencing,	20 81
Surveying,	6 00
Labor,	104 69
Total,	\$240 00

This, with compound interest at five per cent. for ten years, makes the entire cost to date of the plantation of five acres, \$390.90.

The Trees for several years grew slowly and not very satisfactorily. Several lost their leaders, and in various parts of the plantation small blocks failed entirely. The trees, however, have greatly improved during the last four years, and the entire surface of the ground is now, with one or two insignificant exceptions, sufficiently covered. There appear to be from 10,000 to 12,000 larch trees now growing on the five acres. The largest tree measured is 25 feet high, with a trunk 26 inches in circumference at the ground. There are several specimens of this size at least, and it is believed that all the trees, including many which have not yet commenced to grow rapidly or which have been overcrowded and stunted by their more vigorous neighbors, will average 12 feet in height, with trunks 10 to 12 inches in circumference at the ground. Many individuals have increased over four feet in height during the present year. It is interesting to note as an indication of what Massachusetts soil of poor quality is capable of producing, that various native trees have appeared spontaneously in the plantation since animals were excluded from this field. Among these are White Pines 6 to 8 feet high, Pitch Pines 14 feet high, a White Oak 15 feet high and a Gray Birch 17 feet high. The Trustees offered this prize in the belief that it would cause a plantation to be made capable of demonstrating that unproductive lands in this State could be cheaply covered with trees, and the result of Mr. French's experiment seems to be conclusive in this respect. It has shown that the European Larch can be grown rapidly and cheaply in this climate upon very poor soil, but it seems to us to have failed to show that this tree has advantages for general economic planting in this State which are not possessed in an equal degree by some of our native trees. Land which will produce a crop of Larch will produce in the same time at least a crop of white pine. There can be no comparison in the value of these two trees in Massachusetts. The White Pine is more easily transplanted than the Larch, it grows with equal and perhaps greater rapidity, and it produces material for which there is an assured and increasing demand. The White Pine, moreover, has so far escaped serious attacks of insects and dangerous fungoid diseases which now threaten to

exterminate in different parts of Europe extensive plantations of Larch.

Your Committee find that Mr. French has complied with all the requirements of the competition ; they recommend that the premium of one thousand dollars be paid to him.

Answers to Correspondents.

When the woods are cut clean in Southern New Hampshire White Pine comes in very, very thickly. Is it best to thin out the growth or allow the trees to crowd and shade the feebler ones slowly to death?
J. D. L.

It is better to thin such over-crowded seedlings early, if serviceable timber is wanted in the shortest time. The statement that close growth is needed to produce long, clean timber, needs some limitation. No plant can develop satisfactorily without sufficient light, air and feeding room. When trees are too thickly crowded the vigor of every one is impaired, and the process of establishing supremacy of individuals is prolonged, to the detriment even of those which are ultimately victorious. The length is drawn out disproportionately to the diameter, and all the trees remain weak.

Experience has proved that plantations where space is given for proper growth in their earlier years, yield more and better wood than do Nature's dense sowings. Two records are added in confirmation of this statement, and many others could be given :

1. A pine plantation of twelve acres was made, one half by sowing, the other half by planting at proper distances. In twenty-four years the first section had yielded, including the material obtained in thinnings, 1,998 cubic feet, and the latter, 3,495 cubic feet of wood. The thinnings had been made, when appearing necessary, at ten, fifteen and eighteen years in the planted section, yielding altogether ten and three-quarter cords of round firewood and seven cords of brush ; and at eight, ten and twenty years in the sowed section, with a yield of only three and one-fifth cords of round firewood at the last thinning and seven and four-fifths cords of brush wood.

2. A spruce growth seeded after thirty-three years was still so dense as to be impenetrable, with scarcely any increase, and the trees were covered with lichens. It was then thinned out when thirty-five, and again when forty-two years old. The appearance greatly improved, and the accretion in seven years after thinning showed 160 per cent. increase, or more than 26 per cent. every year.

The density of growth which will give the best results in all directions depends upon the kind of timber and soil conditions.
—B. E. Fernow.

Washington, D. C.

Book Reviews.

Gray's Elements of Botany.

FIFTY-ONE years ago, Asa Gray, then only twenty-six years of age, published a treatise on botany adapted to the use of schools and colleges. It was entitled "The Elements of Botany." Its method of arrangement was so admirably adapted to its purpose, and the treatment of all the subjects so mature and thorough, that the work served as a model for a large work which soon followed,—the well-known Botanical Text-book, and the same general plan has been followed in all the editions of the latter treatise. About twenty-five years after the appearance of the Elements, Dr. Gray prepared a more elementary work for the use of schools, since the Text-book had become rather too advanced and exhaustive for convenient use. This work was the "Lessons in Botany," a book which has been a great aid throughout the country, in introducing students to a knowledge of the principles of the science. Without referring to other educational works prepared by Dr. Gray, such as "How Plants Grow," etc., it suffices now to say that for two or three years, he had been convinced that there was need of a hand-book, different in essential particulars from any of its predecessors. When we remember that all of these had been very successful from an educational point of view, as well as from the more exacting one of the publishers, we can understand how strong must have been the motive which impelled the venerable but still active botanist to give a portion of his fast-flying time to the preparation of another elementary work. In answer to remonstrances from those who believed that the remnant of his days should be wholly given to the completion of the "Synoptical Flora," he was wont to say pleasantly, "Oh, I give only my evenings to the 'Elements.'" And, so, after a day's work, in which he had utilized every available moment of sunlight, he

would turn with the fresh alertness which has ever characterized every motion and every thought, to the preparation of what he called fondly, his "legacy" to young botanists. That precious legacy we have now before us.

In form it is much like the Lessons, but more compact and yet much more comprehensive. Its conciseness of expression is a study in itself. To give it the highest praise, it may be said to be French in its clearness and terseness. Not a word is wasted: hence, the author has been able to touch lightly and still with firmness every important line in this sketch of the principles of botany. This work, in the words of its author, "is intended to ground beginners in Structural Botany and the principles of vegetable life, mainly as concerns Flowering or Phanerogamous plants, with which botanical instruction should always begin; also to be a companion and interpreter to the Manuals and Floras by which the student threads his flowery way to a clear knowledge of the surrounding vegetable creation. Such a book, like a grammar, must needs abound in technical words, which thus arrayed may seem formidable; nevertheless, if rightly apprehended, this treatise should teach that the study of botany is not the learning of names and terms, but the acquisition of knowledge and ideas. No effort should be made to commit technical terms to memory. Any term used in describing a plant or explaining its structure can be looked up when it is wanted, and that should suffice. On the other hand, plans of structure, types, adaptations, and modifications, once understood, are not readily forgotten; and they give meaning and interest to the technical terms used in explaining them."

The specific directions given for collecting plants, for preparing herbarium specimens, and for investigating the structure of plants make this treatise of great use to those who are obliged to study without a teacher. The very extensive glossary makes the work of value not only to this class of students, but to those, as well, whose pursuits are directed in our schools. The work fills, in short, the very place which Dr. Gray designed it should.

G. L. Goodale.

The Kansas Forest Trees Identified by Leaves and Fruit, by W. A. Kellerman, Ph.D., and Mrs. W. A. Kellerman (Manhattan, Kansas). This octavo pamphlet of only a dozen pages contains a convenient artificial key for the rapid determination of seventy-five species of trees. By the use of obvious characters the authors have made the work of identification comparatively easy in nearly every instance, and even in the few doubtful cases, the student will not be allowed to go far astray. The little hand-book ought to be found of use even beyond the limits of the State for which it was designed.

G. L. Goodale.

Public Works.

The Falls of Minnehaha.—A tract of fifty acres, beautifully located on the Mississippi, opposite the mouth of the Minnehaha, has been acquired by the City of St. Paul, and land will most probably be secured for a drive of several miles along the river. The bank here is more than 100 feet high, often precipitous, clothed with a rich growth of primeval forest, shrubby and vines. It is hoped that Minneapolis may secure the land immediately opposite, including the Falls of Minnehaha and the valley of the stream to the great river. In this event a great park could be made between the two cities, easily reached from the best part of both, with the Mississippi flowing through it and the Falls as one of its features. This, in connection with the park so beautifully situated on Lake Como, three miles from St. Paul, and the neat parks of Minneapolis and its superbly kept system of lake shore drives, would soon be an object worthy of the civic pride of these enterprising and friendly rivals.

A Park for Wilmington, Del.—After many delays and defeats the people of this city have secured a tract of more than 100 acres, mostly of fine rocky woodland, with the classic Brandywine flowing through it, and all within the city limits, together with two smaller tracts, one a high wooded slope, the other lying on tide water, and both convenient to those parts of the city inhabited by workmen and their families. A topographical survey of these park lands is now in progress as preparation for a general plan of improvement. Of the "Brandywine Glen" Mr. Frederick Law Olmsted once wrote: "It is a passage of natural scenery which, to a larger city, would be of rare value—so rare and desirable that in a number of cities several million dollars have been willingly spent to obtain results of which the best that can be said is, that they somewhat distantly approach, in character and expression, such scenery as the people of Wilmington have provided for them without expense."

Flower Market.

Retail Prices in the Flower Market.

NEW YORK, February 23d.

There is a glut of flowers, particularly of tea roses of an indifferent quality. Bon Silene buds cost from 75 cts. to \$1 a dozen, Perle des Jardins, Niphetos, Souvenir d'un Ami, and Papa Gontiers bring \$1.50 a dozen. C. Mermets are very fine and from 30 to 35 cts. each. Not more than one in three La France roses is perfect; they bring from 25 cts. to 50 cts. each. Mde. Cuisin and Duke of Connaught are 25 cts. each, Bennets 20 cts. each and Brides 25 cts. each. American Beauties are \$1 to \$1.50 each, according to the location where they are sold. Puritans cost 75 cts. each, and Jacqueminots 50 cts. Magna Chartas are the most popular of the hybrid roses at present. They, Anna de Diesbach and Mad. Gabriel Luizet bring from \$1 to \$1.50 each.

Mignonette is very plentiful, well grown and of the spiral variety; it brings 75 cts. a dozen spikes retail, very large spikes bring as high as 15 cts. each. Hyacinths, Lilies-of-the-Valley and Tulips bring \$1 a dozen. Lilacs cost 25 cts. for a spray of one or two tassels. Violets are abundant, mostly of the Marie Louise variety, and bring \$2 a hundred. Fancy long stem red Carnations cost 75 cts. a dozen; short stem Carnations are 50 cts. a dozen; and the dyed Carnations, named "Emerald," are in brisk demand and sell for 15 cts. each. Daffodils are \$1 a dozen; those dyed bring 20 cts. each. Finely grown Forget-me-not brought in small quantity to retail dealers sells for 10 cts. a spray. Calla Lilies bring \$2 and \$3 a dozen, and Longiflorum Lilies \$4 a dozen.

PHILADELPHIA, February 23d.

Heavy demands for flowers dropped off short on Ash Wednesday, and decreased each day until Saturday, when the regular orders for loose flowers caused the trade to pick up again. The demand for Orchids is steadily growing; a fair quantity is used at balls and parties, but nothing in comparison to Roses, Violets and Lily-of-the-Valley. Violets have been in greater demand, so far, than for several years. Large quantities of Tulips have been used recently for table decorations, especially the pink varieties, the favorite color for dinners and lunches. The American Beauty Rose, when cut with long stems, and really first class in every other respect, has been in great demand, at the best prices. Md. Gabrielle Luizet is scarce, the local growers not having commenced to cut in quantity; it is frequently asked for. Carnation plateaus in solid colors have been used freely. Lilacs are considered choice and have been in good demand. Retail prices rule as follows: Orchids, from 25 cts. to \$1 each; La France, Mermet, Bride and Bennet Roses, \$3 per dozen; Jacques, \$4 to \$5; American Beauty, \$4 to \$9; Puritan, \$4; Anna de Diesbach, \$5 to \$7.50; Papa Gontier, Sunset, Perle des Jardins and Mad. Cuisin, \$1.50; Bon Silene, \$1.00; Niphetos, \$1 to \$1.50. Lily-of-the-Valley, and Roman Hyacinths, bring \$1 per dozen; Mignonette, 50 cts., and Freesia the same per dozen; Heliotrope, Pansies, Carnations, and Forget-me-nots, 35 cts. per dozen. Violets bring from \$1 to \$1.50 per hundred; Lilium Harrisii, \$3.00 per dozen; Callas \$2 per dozen, and Lilacs \$2 per bunch of about eight sprays. Daffodils sell briskly at from \$1 to \$1.50 per dozen.

BOSTON, February 23d.

The season of Lent is always looked forward to by the florists with anxiety, for the rest from receptions, assemblies and balls cuts off one of the chief outlets for the choicest flowers: a few warm days are sufficient to overstock the market, and prices take a fall. Buyers are learning, however, that at no period of the year can cut flowers be had in such perfection and variety as during February and March, and although not much required for party occasions they are bought for other purposes in increasing quantities every year, so that the advent of Lent does not now produce utter stagnation in the flower trade. In Roses there is at present a large assortment offered. From the modest Bon Silene, and its new competitor, Papa Gontier, up to the magnificent American Beauty and Hybrid Perpetuals, may be found every gradation of color, size and fragrance. Retail prices vary from 75 cts. per dozen for Bon Silenes and \$1.50 to \$2 for Perles, Niphetos, etc., up to \$3 and \$4 for the best Mermets, Niels and La France; Hybrids and Jacques of best quality bring from \$6 to \$9 per dozen. In bulbous flowers a large variety is shown. Lily-of-the-Valley sells for \$1.50 per dozen sprays; Narcissus of various kinds, Hyacinths and Tulips for \$1 per dozen; Violets, 50 cts. per bunch; Pansies, Mignonette, Heliotrope, Forget-me-not and Calendulas, 50 cts. per doz. Long stemmed Carnations are to be had in great variety at 75 cts. per dozen; Callas 25 cts. each, and Smilax 50 cts. a string. At this season Smilax is at its best, being its time of flowering, and the flowers are deliciously fragrant.

Publishers' Note.

A photogravure of Mr. A. St. Gaudens's bronze medallion of the late Professor Asa Gray will be published as a supplement to the second number of GARDEN AND FOREST.

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The Future of American Gardening.

IT is not surprising that few examples of the gardener's art in its highest development should be met with in America, especially in the more recently settled portions of the country. Even where the designing and planting of a garden are good, the element of time is needed to produce that ripeness and repose which are so satisfying to the contemplative mind. This mellow maturity which yet gives no hint of deterioration and decay only comes with years of care. A new country, or one of shifting population not only lacks the interest which accompanies long continued human association, but nature itself is not subdued into that tranquil and home-like aspect which is worn only where generation has succeeded generation, each impelled by a strong local attachment to its birth-place to conserve and develop its native beauties with affection and intelligence.

And yet the American people are inferior to none in general and genuine appreciation of natural beauty, and no country in the world is endowed with nobler landscape features, a more hospitable climate, or a greater richness and variety of vegetation than our own. Nowhere are flowers more universally cultivated or grown with greater skill. In no other country has the business of the florist been so developed and improved. Nowhere else have the various forms of so-called "decorative gardening" been so profusely practiced. Much of this might perhaps fall under the condemnation of severe taste, but some excuse for it is found in the fact that we have been constantly struggling against wild nature, and something trim and prim, ornate and artificial, is demanded, as a sign that nature has been subjugated. It is noteworthy that those who have been brought up on the pioneer line of civilization, admire, when they come to the older States, a formal flower bed more than they do the best examples of planting in the natural style, and this is perhaps because the latter is more suggestive of the untamed forces with which

they always have been forced to fight. But whatever may be the cause of this devotion to formal flower gardening, the fact remains that the plants themselves are cultivated with singular knowledge and success.

On the other hand, in love of trees and skill in their cultivation, we are far behind the English and Italians. In street planting, especially in our larger towns, we have much to learn from the French, the Germans and other continental nations, while in the skillful use of hardy shrubs and herbaceous plants we are far excelled by other nations. Great progress, however, has been made in this country of late years in the cultivation of orchids and various classes of green-house plants, and of these America now possesses collections hardly surpassed anywhere. And finally, in the highest branch of gardening, the creation of landscape pictures, for which the growing of trees and shrubs and flowers and vines is but mixing the colors on the palette, we have still much to learn from older countries. And yet, that American ability for work of this kind is not excelled, is shown by some of the fine old places on the Hudson, planted early in the century, largely with native trees, which would kindle admiration anywhere. Our older parks, too, like those of New York and Brooklyn, are consistent and impressive works of art, and in spite of much neglect and mismanagement, are noble monuments of their designers' taste and skill.

And there are signs of awakening here in artistic gardening. This is seen in the many instances where men of wealth are preparing spacious pleasure grounds about their houses, and in the growing desire among those of more modest means to beautify their home surroundings. Above all is this tendency manifested in the more frequent inquiry for aid from landscape gardeners and in the number of young men who are turning toward this profession as one which has in it the hope of emolument and distinction.

The future of gardening in America, then, is bright with promise. Our country offers to the landscape gardener wonderful advantages in its endless variety of scenery, the unrivaled richness of its Flora, and such diversity of soil and climate that somewhere within its borders every extra-tropical plant will grow. The imagination can conceive of nothing more lovely and refreshing than a spring garden in New England when vegetation bursts suddenly forth from the restraints of the long winter; nothing more glorious than the color that flames through New England woodlands when trees and shrubs and humbler plants are preparing for their season of rest. And what a field for the artist is offered in the warm rich valleys of the southern Alleghenies, the home of the most beautiful deciduous forest of the world! And as trees and shrubs which have developed under the same sky, blend in softer and more perfect harmonies of form and color than do those brought together from different climates and continents, here where the American forest culminates in its greatest beauty and richness of composition, the artist capable of using all this wealth of vegetation will find his greatest opportunity. And here, too, he can collect, if Nature has not supplied him with sufficient material for his pictures, the plants of all the temperate zones—the evergreens of China and Japan, the Rhododendrons of the Himalayas, the trees of Europe and the Conifers from the highlands of Mexico. Another ideal garden could be made on our north-west coast, where plants which luxuriate in the moist regions of the temperate zone would be at home; while in southern California could be gathered the trees of the Mexican plateau, of the Mediterranean basin, of Australia, and of all the dry countries of the world, and here gardens might be made surpassing in richness and variety of interest even those of the Riviera.

With such advantages we may reasonably look forward to a time when this country will be a land of gardens. What is now needed is that the gathering interest in planting should be properly directed and developed. The basis of

good gardening is the love of nature. To nature the gardener who would be something more than a mere cultivator of plants must turn for inspiration. From the study of nature alone can be learned composition, harmony and fitness in arrangement, and without these the gardener can never hope for success in the creation of a landscape.

To the notes on some American Thorns in another column; it may be well to add that Michigan Thorns give but a faint idea of the value of the different American species of this genus as ornamental plants. The real home of the American Thorn is in the region south of the Red River—that is, in western Louisiana and eastern Texas. Here can be found growing a larger number of species of this genus than in any other part of the world; and here many of our species reach their greatest individual development. Here only can be found the blue fruited *C. brachyacantha*, bordering the low, wet prairies of western Louisiana—one of the largest of the genus, and beautiful in habit, foliage, flowers and fruit. Here, too, the white-barked *C. arborescens*, the largest of the genus, the graceful and delicate *C. apiifolia* and *C. æstivalis*, all reach a development unknown in other parts of the country. The last is one of the most ornamental of the American Thorns. Its large flowers appear in February, and these are succeeded three months later by large, very fragrant, scarlet fruit, which is gathered and sold in great quantities in some of the markets of the South, where it is used for making a conserve. This species probably produces the most valuable fruit of any of the genus; although it must not be forgotten that one of the Thorns of the South Atlantic States (*C. flava*, var. *pubescens*) yields a fruit highly esteemed in the preparation of jellies, which when well made can hardly be distinguished from the true Guavajelly. In the Eastern States, *C. Crus-galli*, all things considered, is the most valuable of our Thorns as an ornamental tree. Its habit, profuse bloom, bright, shining foliage, brilliant autumnal coloring and large, red fruit, untouched by any animal, and hanging upon the trees until February, make this one of the most desirable of all small ornamental trees for American lawns. This, too, is one of the few American trees which seems to thrive in all European climates. A beautiful species of the very largest size, too, is *C. Douglasii* of our north-west coast and northern California, with foliage resembling that of *C. Crus-galli*, but with black fruit, ripening in August. This tree flourishes at the East, flowering and ripening its fruit freely in Massachusetts. We shall have occasion to return to the American Thorns in future numbers.

“To gild refined gold and paint the Lily, to throw a perfume on the Violet”—these are ancient synonyms for lack of judgment and lack of taste, for “wasteful and ridiculous excess.” Yet even their century-long citation has not protected us from a sight of the actual follies they hold up to scorn. So far as we know, an effort has not recently been made to improve the Violet's odor, but we almost expect to hear of such an effort, for the Lily is being painted with much ingenuity and perseverance. Carnations with bright green borders, Daffodils likewise edged with green, Lilies-of-the-Valley dyed a pale red and Callas tipped with pink—these are some of the “novelties” which greet us in many florists' windows. If they were shown merely as curiosities, merely as examples of what can be done in defiance of nature's intentions, the case would be bad enough. But as our readers may have seen in the flower-market report in our last issue, dyed Carnations are in “brisk” commercial demand at fifteen cents each and dyed Daffodils at twenty cents!

We have no wish to fall back upon theoretic preachments in protesting against the lack of taste which this fact implies. There is no reason why we should not attempt to modify the original color of flowers, and this is constantly done by skillful hybridizing, cross-breeding and

culture. But in such cases we work in accord with natural laws, and the result may be beautiful, and certainly it is not monstrous. But a single glance at a dyed blossom will suffice to prove the artistic brutality of the new process. The “Emerald” is the trade name for the dyed Carnation, it might better have been the “Arsenic”; the combination of the same arsenical tint with the yellow of the Daffodil is excruciating to the eye; the pink-edged Calla is almost loathsome in effect; and all explain themselves at once as having undergone artificial manipulation. We believe the process by which some of them are produced is analogous to that by means of which the human skin may be tattooed, and the result appeals to the same grade of taste. We might as soon have expected to see a lady with a blue anchor on her wrist as with an “Emerald” Carnation in her buttonhole.

Landscape Gardening.—II.

TO produce beautiful compositions is the aim of every artist, and the special aim of the landscape gardener is to produce them by arranging the surface of the ground and the plants it bears. It is interesting and instructive to note the points of concord and of contrast which mark his task when it is compared with that of other artists.

He stands with the sculptor and the painter, in contrast to the architect and musician, in that he takes his inspirations directly from nature—works after the schemes and from the models which she supplies. But in some respects he stands quite alone. The painter works with actual colors but merely with illusions of form. The sculptor creates forms but uses colors, if at all, in unnaturalistic and subordinate ways. The landscape gardener depends upon color and form in equal measure and can never dispense with the one or the other.

Moreover, he takes from nature not only his models but his materials and his methods. His colors are those of her own palette, his clays and marbles are her rocks and soils, and his technical processes are the same which she employs. He does not show her possibilities of beauty as in a mirror of his own inventing. He helps her in her actual efforts to realize them—works in and for and with her.

This fact limits and hampers him in certain ways; but under fortunate conditions it helps him to achieve what no other artist can—perfection. “The sculptor or the painter,” writes a recent critic, “observes defects in the single model; he notices in many models scattered excellences. . . . To correct those defects, to reunite those excellences, becomes his aim. He cannot rival nature by producing anything exactly like her work but he can create something which shall show what nature strives after. . . . The mind of man comprehends her effort and though the skill of man cannot compete with her in the production of particulars, man is able by art to anticipate her desires and to exhibit an image of what she was intending.” But the landscape gardener is nature's rival, does create things exactly like her own, can compete with her in perfect workmanship—for does not she herself work with him while he is reuniting her scattered excellences of idea and obliterating her defects? What he cannot do she does for him, from the building of mountains and the spreading of seas to the perfecting of those “particulars” which turn the keenest chisel and blunt the subtlest brush—to the curling of a fern-frond and the veining of a rose. Of course she will not everywhere do everything. If part of her work is in completing man's, part is in preparing for it, and he must respect the frame which she furnishes for his picture, the general scheme which she prescribes. He cannot ask her to build him mountains in a plain, to change a hill-side rivulet to a river, or to make tropical trees grow under a northern sky. But he can always persuade her to produce beauty of some sort if he is wise enough to know for what sort he should ask.

This, of course, is theoretic speaking. Theoretically,

there is no spot on earth an artist could not make beautiful. But some problems would need a life of antediluvian length and dollars as plentiful as the sands of the sea. Practically the landscape gardener—like all other men, and more perhaps than most other artists—is limited by questions of time and money. And he is also limited by his partnership with nature as regards not only the sort but the degree of beauty to which he can attain. Nature may suggest the same sort in two places, but if she prepares lavishly for it in the one case and parsimoniously in the other, the best skill in the world may not be able to make good all her denials and equalize its successes. Yet the landscape gardener can always have what no other artist ever gets—perfection in details; and his general effects, as well as his details, have the great advantage of being concrete and alive. A great advantage indeed—for it means many beautiful results in every piece of work instead of merely one, and perpetual variation in each of the many. His aim is in general the same as that of the landscape painter, who knows that the most potent factors in landscape beauty are light and atmosphere, and who is himself most potent as he simulates them best. But no things in the world—not even the color and texture of the human skin—are so difficult to simulate, so impossible really to reproduce in paint. To the landscape gardener's pictures nature freely supplies them, everywhere and always, and not merely in the one phase for which the painter strives, but in a thousand—changing them with each day of the year and with each hour of the day. And with the passing days and seasons she changes also his terrestrial effects, so that no part of his work is ever twice the same although, if rightly wrought, it is always beautiful. Thus it gives chance and promise for perpetual renewal of the highest kind of pleasure. Our judgments are persistent but our moods continually vary, and we may expect more days of perfect satisfaction from the variable than from the changeless work of art. If we admire a picture we admire it always, but while it may suit us to-day to the inmost fibre of the soul, to-morrow it may leave us cold. Of course there are drawbacks as well as benefits in variability—possibilities of perfect satisfaction are richer in the living landscape, but when realized we cannot keep them for an hour while we are sure of our painting within its narrow range. It will depend upon our temperament which excellence we prefer: limited certainty or uncertain infinitude. But the question does not involve beauty itself—it only involves that finest effect of beauty which means perfect momentary accord between the spirit of the observer and the spirit of the work of art. As regards intrinsic perfection, the best results of the landscape gardener surpass the best painted landscapes by as wide an interval and for the same great reasons as Pygmalion's Galatea surpassed all the other statues which he may have made.

M. G. Van Rensselaer.

Professor Anton de Bary.

HEINRICH Anton de Bary, who was born at Frankfort-on-the-Main, Jan. 26th, 1831, and died at Strasburg, Jan. 19th, 1888, was a striking example of a scientific man who, while pursuing science for its own sake, proved also a benefactor to those engaged in the practical work of horticulture and agriculture in consequence of his brilliant discoveries in vegetable pathology. His botanical career began immediately after he left the university where he had devoted himself to the study of medicine, and, although at the time of his death he had not passed the period of middle age, few have exerted so marked an influence in shaping the course of the botany of the present day. For a short time he was the assistant of Professor Hugo von Mohl at Tubingen and an instructor in botany. In 1855 he was called to Freiburg in Brisgau as Assistant Professor of Botany and Director of the Botanical Garden, where he remained until 1867, when he accepted a professorship at Halle. Shortly after the close of the Franco-German war, in 1872, he was appointed professor in the reorganized University of Strasburg, a

position which he held until his death, although he had tempting calls to Vienna, Berlin and Leipsic. In the summer of 1887 he was attacked by what proved afterwards to be a tumor of the jaw, and, although he submitted to an operation in the hope of relief, he succumbed to the disease after several months of suffering.

The botanical works of Professor De Bary relate principally to the structure and development of cryptogams, but he was also the author of a number of papers on histological subjects, and his "Comparative Anatomy of the Vegetative Organs of Phanerogams and Ferns," published in 1877 and since translated into English, is the best general work on the subject in existence. At one time he was interested in the study of algae and published important papers on *Conjugateæ*, on *Oedogonium* and *Bolbochateæ*, and on the marine species, *Acetabularia Mediterranea*. We should also mention his important work on Apogamy in Ferns, in which he gave a detailed account of the manner in which the sexual reproduction in ferns may be replaced by a non-sexual growth, with remarks on apogamy in other groups.

But his most important work and that which is of most interest to our readers was on the development of Fungi, especially those which produce disease in plants. One of his earliest publications, in 1853, was "Investigations on the Rust-fungi," especially those which cause diseases of grain and other useful plants. This work was a careful study of a number of species then supposed to belong to *Uredineæ*, rusts, and *Ustilagineæ*, smuts. At that date De Bary adhered to the views of older writers, and considered that the rust stage, or *Uredo*, was not connected with the final, or teleutospore forms, like *Puccinia*. It was not until the publication of Tulasne's paper in 1854 that botanists recognized that the red rust, the *Uredo*, was only a stage of the black rust. In a remarkable paper published in 1863, "Researches on the Development of some Parasitic Fungi," De Bary showed by an examination of *Uromyces appendiculatus*, the Bean-rust, that not only were there two stages, the *Uredo* or red rust, and the teleutospore, or black rust, but that a third stage, the *Æcidium*, or cluster-cup, is found in Fungi of the rust family. In 1865 in his "New Observations on *Uredineæ*" and in a supplement published the following year he gave an account of his experiments in which he showed that the cluster-cup growing on the Barberry is a stage of the *Puccinia*, or blight, found on different grains and grasses. These conclusions, warmly supported by some and opposed by others, may be considered the starting point of one of the most fascinating, and, from a practical point of view, most important fields of botanical study, the metamorphoses of *Uredineæ*. Scarcely less important than the paper last mentioned is that on *Æcidium Abietinum*, in 1879, where a very minute account is given of the different stages of the rust on *Abies excelsa* and *Rhododendron ferrugineum*.

The researches of De Bary on the Potato rot are well known. The Fungus which causes the rot was first described in 1845 by Madame Libert, a Belgian botanist. De Bary, in 1860, described the method of the germination of the conidial spores and the production of zoospores—an important discovery, practically as well as theoretically. In his "Researches," published in 1863, to which we have already referred, he included an account of the rots, *Peronospora*, which is a model of thoroughness and clearness. Besides these, he published in 1861 a paper on the "Present Epidemic Disease of Potatoes," a popular, well written sketch, and in 1876, "Researches into the Nature of the Potato Fungus," in which he embodied the results of investigations made at the request of the Royal Agricultural Society of Great Britain, in which there is not much added to our knowledge of the subject.

We can only refer briefly to De Bary's other mycological writings, which appeal rather to the specialist than the general reader. He contributed much to our knowledge of the *Myxomycetes*, a group whose position is still doubtful, some regarding them as animals and others as plants, and he published numerous valuable papers on *Saprolegnieæ*, *Ascomycetes*, and other orders of Fungi. We owe to him the best summary of what is at present known about Fungi. His "Comparative Morphology and Biology of Fungi, Mycetozoa and Bacteria," issued in 1884, and recently translated into English, is an admirable treatise on a subject which attracts more and more students every year. Nor should we forget his "Lectures on Bacteria," of which a second edition has been issued, although the first only appeared in 1885. These lectures present, in a most attractive and readable form, the present state of bacteriological science.

De Bary was an excellent teacher, as well as an original investigator. In the lecture room he was not seen to such advantage as when in his laboratory among a small number

of earnest students. His delivery was not marked by any rhetorical elegance, but his lectures were crammed with facts, and his remarks were always to the point and full of suggestions. His laboratory was a resort of special students from both sides of the Atlantic, and the list of younger professors who now point with pride to the fact that they were once his pupils, is a very large one. Earnestness and thoroughness characterized his work both as a teacher and an investigator, and his geniality and sprightliness made him a great favorite with all who knew him.

W. G. Farlow.

Winter in Mobile.

IN ordinary years the waves of low temperature from the north are felt to some extent through the coast regions of the Gulf States. Heralded by a northern blast which clears the sky, come a few clear frosty days, or occasionally a slight fall of evanescent snow; then plant life takes a brief rest, and the landscape, for a space, assumes a wintry look. Usually the departure of the last Rose of summer, which lingers till mid-December in our gardens, is followed by a rest in vegetation, which awakes again under the breath of spring in late January. This year, however, the mean daily temperature of December was 50° and we had but two slight frosts. The annual garden weeds, like *Enothera humifusa*, Chickweed, Peppergrass, and intruders like *Veronica peregrina* and *Lamium amplexicaule*, kept up luxurious growth all winter long, and the low Speargrass (*Poa annua*) covered waste places with its sward of lively green, without any interruption. Several of our late autumnal plants, like some species of *Chrysopsis* and *Aster*, under cover of the woods, were found blooming long after New Year's. The Japanese plum, *Eriobotrya Japonica*, began to bloom in early November, and continued to unfold its panicles of fragrant white flowers until the close of the year, mingling their perfume with that of the flowers of the Sweet Olive (*Olea fragrans*). Violets, Candytuft, Sweet Alyssum and Daisies bloomed abundantly, as did the Sweet Olive and all varieties of the Camellia. Among the forest trees, the White Cedar was in full bloom on the first day of December, and the leaves of deciduous trees were still vivid with their autumnal tints. Festoons of different species of *Smilax*, loaded with berry clusters of gleaming scarlet or purple black, were clambering over the broad leaved evergreens, giving to the midwinter woodlands a tropical beauty, in the presence of which it was hard to realize that our northern States were swept by blizzards. In fact, it seemed that autumn joined hands with spring, the year passing almost imperceptibly from one to the other.

The January weather was still more remarkable, showing the mean temperature to be only 54°. Before the end of its second week, *Viburnum protensum*, one of our hardiest exotic shrubs, taking the lead among the harbingers of spring, was followed promptly by an early Honeysuckle, with its fragrant pale rose flowers, while *Narcissus* and *Hyacinths* were adorning our flower beds. Later in the month the thermometer fell to 20°, and the mean temperature for five days was 46°. But the slight injury caused to vegetation quickly vanished with the sunny days that followed and plant life proceeded without a check until the present time.

In January, too, the Japan Quince blazed with scarlet bloom and the Forsythia hung out its golden bells, and in the last week of the month our southern Bluets, *Houstonia patens*, were smiling in the pastures and pine barrens. In the forests, the Cypress, the Red Cedar and the Swamp Maple were in full bloom, as was the *Alder* along the banks of the streams, while climbing over the bushes the loveliest of our wild vines, the Yellow Jessamine, had begun to unfold its flowers.

Mobile, February 15th.

Karl Mohr.

Foreign Correspondence.

London Letter.

Lælia albida, a lovely little Mexican Orchid, with its ivory white and fragrant flowers, is one of the best of all winter flowering Orchids, and especially valuable because it can always be relied on for Christmas bloom. A single spike is beautiful, but imagine a mass of it three feet across, carrying no fewer than 400 flowers! Such is the sight I enjoyed the other day in Sander's Orchid nursery. There were two masses of almost equal size growing on flat rafts, and suspended over a water tank, surrounded by great blocks of artificial rock, in a large intermediate Orchid-house. The two plants have together over 800 flowers, a charming mass of delicate white and pink, for the lips of all the flowers are rose-tinted. The fra-

grance, too, of such a quantity of bloom was delicious, and pervaded the whole house. Both masses were in the same state as when imported, and are supposed to be the largest ever brought to England alive. This *Lælia* is not only one of the prettiest of winter Orchids, but is one of the easiest to grow, merely requiring to be placed on wood blocks or in baskets, in what we call here a cool house, one in which the summer temperature ranges from 60° to 70°, and not falling below 45° on winter nights.

A new *Angræcum*, which proves to be one of the prettiest ever introduced, was lately exhibited here for the first time by the Messrs. Sander, under the name of *A. Sanderianum*, and won the highest certificate of merit. It is small in growth, having a few long, thick leaves of deep green, and about two inches wide. The flower spike is about a foot long of a soft fawn color and thickly beset with flowers. These are about an inch across, with snow-white sepals and petals, and slender white spurs some three inches in length. The flowers being so numerous, and of such purity, and the spikes so graceful, the effect of the flowering plants is charming. I saw the same plant in the St. Albans Orchid nursery by the hundred, every one being in bloom, with two and three spikes on each. It is therefore very floriferous, and is considered one of the easiest to manage. The thicket of white flower spikes, all gracefully drooping from suspended plants, was one of the most pleasing sights I have seen among Orchids.

Percival's Cattleya, one of the newer varieties of the polymorphous *C. labiata*, heralded the flower season of this genus. Those who confine their collection of Orchids to the most select must include this one, as it is not only the earliest flowering of all, but one of the most beautiful. When introduced a few years ago it was said to be autumn flowering, but it has not proved to be so here, although I am told that in America it flowers some weeks before it opens here. At Sander's nursery about holidays this *Cattleya* was the chief feature, hundreds of plants being in bloom, exhibiting a great variation of color, some being many shades darker than others. It is what one would call a medium-sized *Cattleya*. The sepals and petals are a deep rose pink, and the lip is invariably adorned with an intensely deep blotch of maroon crimson, which looks like velvet. It is a very free flowering kind, and with us is not at all difficult to grow well.

The *Snowy Masdevallia tovarensis* and the fiery-looking *M. ignea* are two invaluable winter Orchids, both being in bloom now. I have recently seen a plant of the white carrying sixty flowers in twos and threes on each spike, and another of *M. ignea* whose flowers are orange scarlet, lined with crimson, with forty flowers, evidence of how these gems of the South American Andes flourish in England. I suspect that American Orchid-growers have some difficulty in growing these cool mountain Orchids on account of your hot and dry summers, but in any place where they succeed the two I have named here should be grown in gardens as largely as their owner's accommodation and pocket can afford.

A beautiful green-house climber named *Oxera pulchella*, from New Caledonia, and entirely new to European gardens, was shown here recently for the first time by Sir George Macleay. The plant is nearly allied to *Clerodendron* and in habit of growth resembles the climbing species of that genus. It has long, slender branches, with deep green shining leaves, like those of *Stephanotis*. The flowers are large, tubular and wide-mouthed, pure white and with two protruding stamens. They are borne in large, dense clusters, a score or more together on the leaf axils. It is extremely floriferous, as a flower cluster is borne from almost every leaf point. It is looked upon as a most valuable addition to green-house plants, more particularly as it flowers habitually in the depth of winter, when most appreciated. It will become a popular climber, and the gardener who grew the specimen exhibited, assures me that it is easily cultivated. He grows it in an airy green-house trained to a rafter of the roof. It was brought from a garden in Algiers. The genus *Oxera* has been hitherto unknown to English gardens, and till recently botanists knew but one species, but now they number ten. This climber is, unquestionably, one of the most remarkable plants exhibited of late years.

Kennedy's Marryattæ (*K. prostrata*, var. *major*, D. C.), an Australian climbing plant of the Pea family, has been for some time the glory of one of the green-houses in Kew Gardens, and yet it is to be found in few private gardens, though it is such an old plant and so beautiful. I should be glad to hear that it was more generally appreciated in America. No other green-

house climber can compare with it in midwinter, and the fact that it requires little or no cultural attention, if once well planted in an ordinary green-house, enhances its value. At Kew it is planted out in free soil beneath the side stage; the main stem is trained up the rafter on one side of the span roofed house and down the one on the opposite side. The shoots, varying from two to six feet long, are thickly wreathed with bright scarlet flowers, like miniature lobster claws in shape, among the pale green trifoliate leaves, and the whole forms an exquisite floral curtain across the house. It should not be planted out until it gets a good size, as it wants all the light possible when small in order to get strong. When well rooted and about five or six feet high plant it out in a green-house that is well ventilated and has a minimum Winter temperature of about 40° F. I imagine that your hot summers would suit the plant well and so ripen the wood that its winter bloom would be abundant. Besides flowering for several weeks in succession in midwinter, it flowers in spring and summer; in fact, it might be almost called a perpetual bloomer.

The Crimean Lime (*Tilia petiolaris*) promises to become one of our most ornamental deciduous trees. Though not new

quite distinct from the Hungarian linden, as Sir Joseph Hooker pointed out several years ago (*Botanical Magazine*, t. 6737.) It is one of the most promising ornamental deciduous trees ever introduced into this country. Fine specimens may be seen in the Central Park in this city.—E.D.)

Rhododendron primrose is the finest yellow flowered variety that has yet been obtained among the Javanese or Green-house Rhododendrons which the Messrs. Veitch, of Chelsea, have for years been occupied in improving by hybridizing. This variety, Primrose, is the result of intercrossing a small, pale yellow flowered species named *R. teysmannia* with a hybrid variety with large well formed flowers of a yellowish pink tint, called Maiden's Blush, raised several years ago. The new hybrid had flowers over one and one-half inches across, with broad, overlapping petals, making a handsome symmetrical flower. The color is a clear yellow, with not a trace of the pink tinge of its male parent. It is considered a great stride in advance in the production of a yellow flowered race of green-house Rhododendrons. W. Goldring.



Entrance to the Arnold Arboretum.

here, in a nurseryman's sense, it is but little known and rarely planted, though the other silver-leaved Lime, the Hungarian lime (*T. argentea*), is a common stock plant. For many years the Crimean Lime has been known in English nurseries under the erroneous name of *T. Americana pendula*, but its true name is now being adopted. It is an extremely fine tree and different from the other Limes. Its leaves are large, heart shaped, of a deep green above and silvery white beneath. The slender twigs are pendulous, and as the leaf stalks are long and slender, the whole tree is of a gracefully weeping habit, of rounded outline and moderately dense. Perhaps the finest specimen in the country exists in Mr. Maurice Young's nursery at Milford in Surrey. This tree is about sixty feet in height, has a huge head fifty or sixty feet through, and has a diameter of stem of about two feet, and yet it exhibits all the elegance of growth of a young tree. It must be a fast growing Lime, as this large tree has certainly been planted since 1838, when Loudon compiled his Arboretum. At that time it was considered to be a variety only of *T. argentea* and though cultivated at Odessa, was not yet introduced into England.

(The Crimean lime is also generally known in the United States as *Tilia argentea pendula*, although specifically

Entrance to the Arnold Arboretum.

NO coniferous tree excels the Hemlock Spruce when young in grace of outline, softness of spray or brightness of color. As it grows older it becomes a tree of stately proportions, with drooping branches thickly furnished with dark leaves. When massed in northern woods or in the high mountains further south it invests the forest with the charm of a mystery peculiarly its own. North of the drift line, wherever a stream of water has furrowed out a deep gorge, the Hemlock often takes possession of the slopes, making dark glens that are always attractive features in the landscape. By a fortunate chance one of these banks with its original growth unimpaired still remains within the limits of the city of Boston and is included in the Arnold Arboretum. This steep hillside is shown in the illustration above. From the roadway which swings around to the right it is separated by a ravine through which flows a small stream and its dark mass of foliage and noble sky-line give a dignity to the entrance which is hardly excelled by that of any park in the world. Besides its effectiveness from an artistic point of view, this representative example of one of our most interesting forms of forest scenery is well placed at the vestibule of the sys-

tematic plantations in which are to be grouped specimens of every species, and well-marked variety of the trees that can be made to flourish here from all the cooler regions of the globe.

Shrub Propagation.

THE old adage, "What is one man's meat is another man's poison," seems especially applicable to the reproduction of hardy shrubbery. Not only each genus, but often each species, and in a few cases each variety, requires a separate method of propagation. For instance, the ordinary Snowball, *Viburnum opulus sterilis*, is of the very easiest manipulation, and strikes like a weed, and yet its Japanese relative, *V. plicatum*, is quite difficult to handle. Most Spiræas are easily propagated by cuttings, and yet the nearly allied *Exochorda* is exactly the reverse. All the Hydrangeas root readily excepting *H. quercifolia*, which is stubborn in this respect. The ordinary Quince emits roots with almost any degree of moisture, but cuttings of the Japan Quince refuse to do so under the most advantageous circumstances.

Most common shrubs, as Weigelas, Spiræas, Hydrangeas, Lilacs, Deutzias, Tamarisks, Viburnums, etc., are best propagated by soft-wood cuttings in midsummer, care being taken to secure the wood as soon as it begins to harden. This is the critical period, and on its observance depends success or failure. Cuttings 3 to 4 inches long, with two or three curtailed leaves at the summit and without any regard to a bud at the base, should be placed in shallow boxes filled with firmly pounded sand. A perfectly close, warm atmosphere, with an abundance of moisture and shade, will cause roots to form in a short time, when they may be gradually inured to the outside air. They will keep in the boxes until the succeeding spring if protected in cold frames.

The Japanese Snowball, *Viburnum plicatum*, from the peculiar nature of its wood, requires a long time to root, and should never be hurried nor deluged with water. The newly rooted plants must be potted singly as soon as possible, and permitted to remain in the house until autumn, when they, too, may be wintered in cold frames. Soft-wood cuttings taken from forced plants in winter root more quickly than those grown in the open air, but the young plants must remain in pots for a year. The weaker short-jointed side shoots always make the best cuttings, and will grow just as rapidly after rooting as those struck from vigorous leading branches.

Any shrub having underground stoloniferous branches, which are, of course, supplied with buds, should be increased by root cuttings, especially where other cuttings are difficult to strike. The Japan Quince, Oak-leaved Hydrangea, *Spiræa opulifolia*, *Philadelphus*, *Rubus* and *Rhus* are examples of this class.

Our stock of most hardy shrubs is most cheaply increased by hardwood cuttings, where an abundance of wood is obtainable, when the weather is not too dry. These may be cut into lengths of eight or nine inches from last year's growth, tied into bundles, and either buried at once in the open ground, or preserved in boxes of sand or moss during freezing weather. At the earliest possible moment in spring, they should be put into rows, in a well prepared piece of ground, and be well tramped about the base. *Exochorda grandiflora*, *Culycanthus floridus*, *Æsculus parviflora* (Dwarf Horse-chestnut), *Euonymus Europæus*, *Spiræa callosa*, *Berberis*, *Mahonia*, *Hypericum*, and some others, seed freely, and thus afford an easy and rapid mode of propagation. Seeds sown thinly in the spring in shallow frames, and covered lightly with brush, will as a rule germinate quickly, and form nice little plants in two or three years.

Divisions of large clumps is mainly practiced on plants difficult to propagate by cuttings, as *Clethra*, *Itea*, etc., or where an old specimen has to be removed, and two or three smaller plants are deemed preferable. Nothing is gained by planting so-called extra-sized shrubs. In the time usually required for such to recover from the removal, young thrifty plants equal them in size, and surpass them in vigor. The long tough stems of most old plants are averse to forming new branches, even when cut severely back, which is not the case with robust young stock.

Layering is generally a tedious process, and may not always be recommended when a large supply of shrubs is needed. Time is money to the nurseryman, and a few young plants gained by bending down the branches of some old specimen, are really of little moment. Still there are exceptions to the rule. By setting out several old clumps of *Magnolia obovata*, Purple-leaved Berberry, or Purple-leaved Hazel, the number of shoots increase with the age of the parent, and readily form roots after being nicked and covered firmly with suitable earth at the base.

Grafting shrubs is restricted to the skilled gardener, and is worse than useless in the hands of a novice. Although easily performed in Europe, owing to certain climatic influences, with us it requires great care and attention. Rhododendrons and Azaleas are necessarily increased in this way. To obtain a supply of the newer and attractive varieties of *Althæa*, some of our cultivators resort to ordinary whip-grafting. In two years' time, if not injured by the winter, the plants will be of fine size, and suitable for the market.

Foreign gardeners obtain a supply of the newer and rarer varieties of Lilacs, and some other shrubs, by grafting on small seedlings and covering them with a bell-glass, but in this country it is seldom practiced, owing to the amount of care necessary to make it a success. *J. Hoopes.*

Note on our Native Irises.

MANY old world Irises have long been and still are favorites in cultivation, but our own native species have received little attention from horticulturists, and most of them are imperfectly known even to professed botanists. As they are among the handsomest of our wild flowers they deserve the attention and study of cultivators and botanists alike. Of the genus *Iris* there are over a hundred known species, of which we have at least eighteen. These are equally divided between the region east of the great plains and that west of the Rocky Mountains. They may be grouped as follows:—

A.—Eastern and arctic species.

a. Dwarf; the only American species, excepting *I. hexagona*, which have either crest or beard.

I. LACUSTRIS; shores of Lakes Huron and Michigan.

I. CRISTATA; of the Alleghany Mountains.

I. VERNA; wooded hills and pine barrens, from Kentucky and Virginia to Alabama and North Carolina.

b. The *I. tripetala* group, having the inner petals very short.

I. TRIPETALA; pine-barren swamps of the southern Atlantic coast.

I. HOOKERI; on the lower Saint Lawrence River.

I. SETOSA; a Siberian species found in Alaska.

c. The *I. versicolor* group.

I. PRISMATICA (*I. Virginica*); the slender narrow-leaved species found mainly near the Atlantic coast.

I. HEXAGONA; a tall crested species of the swamps along the southern Atlantic coast.

I. CUPREA; with dull yellow or brownish flowers, in swamps of the inner districts from Southern Illinois southward.

I. VERSICOLOR; the common broader-leaved northern species, from Minnesota to the Atlantic and southward. This species is at present made to include all the forms that cannot be placed in the preceding. Among those forms (often tall and large-flowered) which occur in the Southern States, from Virginia westward and southward, there are some which are certainly distinct from the common Northern form, and perhaps from each other. A comparison of living specimens is necessary, however, to a determination of their distinctive differences.

B. Western species (not readily grouped by characters).

I. MISSOURIENSIS; the only species of the interior, ranging from the Rocky Mountains to the Sierra Nevada, and from the British boundary to Arizona and Colorado.

I. TENAX and *I. TENUIS*; a slender species of Oregon and Washington Territory.

I. MACROSIPHON, *I. DOUGLASIANA*, and *I. BRACTEATA*; of the Coast Ranges of Northern California and Southern Oregon; often low and slender, the flowers in the first two having a long narrow tube.

I. HARTWEGI; a low narrow-leaved species of the Northern Sierra Nevada.

I. LONGIPETALA; a stout several-flowered species of the coast from San Francisco to Monterey.

Few of these Western species have been studied from the living plants and they cannot yet be said to be well known, for in dried and pressed specimens not only the delicate colors but many of the other characteristics of the flowers are lost beyond recovery. But Irises are generally of easy cultivation, adapting themselves readily to a diversity of treatment, and it is much to be hoped that our enterprising florists and lovers of flowers will try their skill upon these our native beauties. They can thus have the satisfaction not only of working a new field which promises rich floral rewards, but also of giving essential aid to the botanist in determining more accurately the characters and limits of the different species. It may be added that Prof. Michel Foster, of Oxford, England, is making



Fig. 4. *Lilium Grayi*.

a special study of the genus, and for that purpose is endeavoring to obtain roots or seeds of all our forms from which to grow the plants in his own garden. Roots from any part of the country, and especially from the South and West, will be very acceptable and thankfully acknowledged, whether sent to him, or to the Botanic Garden, at Cambridge, Mass.

Sereno Watson.

Lilium Grayi.*

UPON the trip which Dr. Asa Gray made to the Alleghany Mountains in 1840 he collected upon Roan Mt., in North Carolina, a single specimen of a lily which was considered by him to be a form of the common *Lilium Canadense*, and as

such it was preserved in his herbarium at Cambridge. During the last ten years the same form has again been found upon the same mountain, though not abundantly, and it has also been cultivated in the Cambridge Botanic Garden. Though evidently related not distantly to *L. Canadense*, yet it differs from it so decidedly that it has been deemed deserving of specific rank and has been honored with the name of its discoverer. Its more striking characteristics appear plainly in the accompanying figure. As contrasted with *L. Canadense*, the flowers are smaller, less pendulous, and broader at base; the petals are broader in proportion, less tapering at the top, and not at all recurved; and the leaves are perfectly smooth, and usually broader and less narrowly pointed. In *L. Canadense* they are rough upon the edge and usually also upon the veins beneath, and sometimes over the whole lower surface. In this respect that species differs also from *L. superbum*. The flowers are dark colored, of a deep reddish orange, uniformly dotted within with rather small purple spots. In its native locality it blooms in June. The bulbs are like those of *L. Canadense* and *L. superbum*, renewed from year to year upon a perennial rootstock, and respond as kindly to a similar culture. The species has been found upon the Peaks of Otter in Virginia and probably occurs in many other places in the southern Alleghanies.

S. H.

*L. GRAY, WATSON, *Proc. Am. Acad.*, xiv, 256. Leaves in whorls of 4 to 8, lanceolate, acute or slightly acuminate, not at all scabrous; flowers often solitary, ascending, or somewhat nodding, broadly funnelliform, two inches long or less, the petals oblanceolate, abruptly acute, not recurved, deep reddish orange, spotted within.

American Thorns as Ornamental Plants.

THERE is a general impression that the native Thorns are valuable as ornamental plants, and yet they are rarely seen in private grounds unless they grow there naturally. There are two reasons for this neglect: the difficulty of transplanting and growing them, and the perplexing variations of the wild plants.

There is little difficulty in growing the Thorns from seeds if the seeds are stratified in sand as soon as ripe, and if the operator is willing to wait a couple of years for the appearing of the seedlings. When young, the plants are removed readily, but success is rare in removing large specimens which have never been transplanted.

The perplexing variations in the Thorns are among their most attractive features and render their cultivation all the more desirable. These variations have reference to size, color, shape, and season of fruits, to habit of growth and occasionally to leaf character. In certain species which occur in Michigan, notably in *Crataegus punctata*, the fruit is so inconstant that it cannot be relied upon for specific characters. Even yellow-fruited forms occur. In some individuals the fruit is nearly as large as a small Siberian crab, and is borne near the centre of the top, hanging in attractive maroon balls from the horizontal spray. In other specimens it is scarcely larger than a pea, and is borne much nearer the ends of the branches, which, in this case, are usually more upright than in the former variation. In short, so inconstant are the Thorn fruits, that the observing traveler in these parts is constantly

attracted and bewildered by them. Many, if not most of these variations, are not reproduced by seeds. In order to perpetuate them the grower should graft from them.

Good ornamental-fruited plants are not abundant. We find that the large-fruited Thorns drop their fruits early. This is due in part to the weight of the fruit and in part to the ravages of the codling moth and the plum curculio. The fruits of the best forms of the scarlet Thorn (*C. coccinea*) are especially liable to drop. We shall spray our plants with Paris-green water next spring. Of the Michigan kinds, the pear-fruited Thorn (*C. tomentosa*,) holds its fruits best. Up to Christmas all these ruby colored fruits remained erect, long after every other sort had fallen. The fruits are small, resembling a small rose-hip, and contain so little flesh that the worms do not trouble them. They are borne in clusters. Hereabouts the branches of this Thorn are nearly bare of leaves where the clustered fruit is borne, so that the autumn aspect of the plant is singularly attractive.

Thorns are attractive in fruit, in habit, in foliage and in flowers. Upon this classification I should place our Michigan Thorns, five sorts, as follows, in order of preference:—

FOR FRUIT: *C. tomentosa* var. *pyrifolia*, *C. punctata* (*C. tomentosa* var. *punctata*), *C. coccinea*, *C. Crus-galli*, *C. subvillosa* (*C. tomentosa* var. *mollis*).

FOR HABIT: *C. punctata*, *C. coccinea*, *C. subvillosa*, *C. Crus-galli*, *C. tomentosa* var. *pyrifolia*.

FOR FOLIAGE: *C. Crus-galli*, *C. coccinea*, *C. subvillosa*, *C. tomentosa* var. *pyrifolia*, *C. punctata*.

FOR FLOWERS: *C. coccinea*, *C. Crus-galli*, *C. punctata*, *C. tomentosa*, var. *pyrifolia*, *C. subvillosa*.

Michigan Agricultural College.

L. H. Bailey.

Plant Notes.

Milla biflora, Cav., in its Home.—By an occasional glance at horticultural journals, whenever returned to civilization, I have been gratified to learn that this plant, which I have admired in the wilds of North Mexico, is being brought into general cultivation. I had for two years seen it scattered over the grassy plains and foothills and even on the broader mountain summits about Chihuahua—the plant on the richer plains growing to a height of two feet and bearing half a dozen flowers, in the thinner, dryer soil of the mountain top less than a foot high with but a single flower—but, not until I reached the high plains about the continental divide and near the Cordilleras, did I find it in abundance. Here on broad swells were miles of prairie bespangled with its silver stars crowding upon a yellow-flowered Phlox and a purple Pentstemon. From a bulb one-half to three-fourths inch in diameter, planted two to four inches deep, it sends up a stem one to two feet high, bearing one to five flowers. Under good culture the size of the bulbs must rival those of some classes of Gladiolus, and a much taller stem must bear an umbel of a dozen flowers, whose size is proportionately increased. The fact that its flowers possess much endurance, and succeed one another in the umbel during many days, in the way of Agapanthus, must add merit to the plant. It should prove hardy, with a light covering of leaves, in American gardens, and would doubtless thrive best if thus wintered in the soil. The plant propagates itself by seed only.

Calochortus flavus, Shult. f.—Associated with *Milla biflora* in the drier situations we find this, another liliaceous plant of much beauty, as yet little known in gardens. On a branching stem a foot high it bears two to four, or more, nodding flowers, one to two inches broad, of rich crimson and gold and furred within. In a Northern garden the plant has shown even in one year much increase in its size and in the number of its flowers.

C. G. Pringle.

Caryopteris Mastacanthus, Schauer.—Among the novelties of late years this beautiful shrub, introduced into Europe by Veitch & Sons, deserves special notice. A native of China, its hardiness was doubted at first, but it has done very well in a dry, sunny position; as well at Baden-Baden as in England. It is a much-branched shrub of a sturdy appearance much like a Ceanothus. Along the branches and branchlets, wherever there is a leaf, a little bunch of small starry flowers is produced, assuming an umbellate form and decorating the whole shrub with deep blue. It flowers here about the middle of October, when flowering shrubs are quite as rare as blue flowers. Planted against a low wall and left to grow at will, all passers-by are struck with its beauty.

Baden-Baden.

Max Leichtlin.

(This plant was discovered by Fortune in Southern China, and is well described in De Candolle's *Prodromus*, xi. 625. It is a native also of Japan, where it is said to grow on the borders of old fields and on the summits of mountains. It is from Japan that the Messrs. Veitch introduced it into cultivation, and there is a prospect, therefore, that it will prove hardy in the United States. A good figure of *Caryopteris mastacanthus* appeared in the *Gardener's Chronicle*, xxi. n. ser., 149. It belongs to the Verbenaceae family.—Ed.)

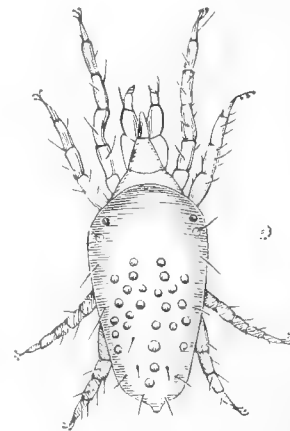
The Red Mite on Verbenas.

THE two packages of Verbena sent by Mr. Peter Henderson to the office of GARDEN AND FOREST, one containing young, healthy plants, and the other those which have been dwarfed and crumpled by the attacks of the mite, illustrate well the work of this pest. We could not find any full-grown specimens, but only the very small young, which were of a pale yellowish color.

The red mite, erroneously by some called the red spider, is one of the few mites which spin a web. When we examine the mouth parts it will be seen how well adapted it is for cutting into and sticking close to leaves; its jaws, like those of seed-ticks, form a spiny beak, with the points directed backwards; with this beak it can anchor itself in the soft parts of the under side of leaves, while with the forceps-like feelers it can eat its way into the leaf, or grasp surrounding hairs or projecting parts of the leaf and steady itself while sucking the sap of the plant. Its presence may be detected by the slight web, the blighted, pale patches on the leaf, and sometimes, as in the examples before us, by the striking alteration in the leaves and the dwarfed appearance of the plant.

A general pest of Plants, both in the hot-house and in the garden, when it varies much in color, most of them when fully grown being greenish to rust-red, sometimes quite dark, the creature propagates rapidly, and abounds most in hot, dry seasons, moisture being unfavorable to its growth.

As to remedies, it should be borne in mind that all mites are very susceptible to sulphur, hence as a preventive measure laying flour of sulphur upon the pipes in the hot-house has been recommended. It would also be well to underspray the leaves of infected plants with such a solution of sulphur as would cause the powder to remain on the leaves. Spraying machines are the most efficient means of rapidly and evenly diffusing insecticides of all sorts, though we have not heard of their use in



Red Mite (*Tetranychus telarius*).
From Saunders' "Insects Injurious to Fruits."

the hot-house. Finely powdered tobacco, or even Paris green or London purple in solution, the latter carefully applied with the sprayer to plants not in flower, would be worth trial.

Nearly all mites, like all insects, breathe through minute openings in the sides of the body, hence any oily or greasy substance which, spreading over the body, will form a film over the air-holes, will kill the creature; it is soon asphyxiated or drowned. For this reason greasy or oily substances are the most powerful and sure insecticides. Oily emulsions, even cotton-seed, or any other vegetable oils, could easily be used in hot-houses; kerosene emulsions should be used with care, and only after experiments, so as not to injure the plant itself, since mineral oils are most destructive to plant-life. Perhaps underspraying with whale-oil soap or sulphur in solution is the readiest and most available remedy, but it would be worth while to experiment with the Paris green or London purple solutions, also kerosene emulsions, which have proved so successful out-of-doors; always bearing in mind that frequent showerings with soap-suds or water alone, by which the leaves are kept wet, tends to prevent undue increase of the pest. Mr. Henderson thinks he has discovered a complete remedy for this pest in the use of manure water. The increased vigor of the plant under this treatment seems to enable it to outgrow the ravages made by the mite.

A. S. Packard.

Cultural Notes.

Primula Obconica.—This is a comparatively new Primrose, a native of China, and one of the sweetest and loveliest, and so far as I know, the most free and continuous blooming of the genus.

It was discovered in the neighborhood of Ichuny, Central China, by Mariés, collector for Veitch, of London, and first bloomed in cultivation in the Veitch nurseries in September, 1880. In the *Botanical Magazine* (tab. 8582), 1881, it is figured and described under the name of *Primula poculiformis*. In *The Garden*, September 6th, 1884, there is an excellent colored plate of it prepared from an English garden-grown plant.

Soon after its *début* into English gardens it found its way to America, and so well has it behaved that it has become a fixed favorite wherever grown. Indeed, so favorable an impression has it made that one florist near Boston has made a specialty of it for cut flowers, and the Boston seedsmen this year offer it as their most important novelty.

We have it here and are exceptionally well pleased with it. We treat it as a cool green-house pot plant, and find that it is of the easiest possible culture, free growing and continuous blooming, and may be treated as an annual or perennial. Veitch speaks of it as "flowering continuously and profusely from spring to autumn," and recommends it "during the summer months for the open border." Some plants procured two years ago have been in bloom continuously ever since then and have more flowers now than they have had at any time previous. I sowed some seed last spring, it germinated in about two weeks, and the seedlings have grown and flourished. They began blooming in August and have been in full bloom ever since.

The foliage much resembles that of *P. cortusoides*, a Siberian species grown in our gardens as a hardy perennial, but is not deciduous. The flowers are white to pale mauve-purple, showy and sweetly fragrant, and are borne in loose umbels on tall scapes that rise well up above the foliage; and in thrifty plants the umbels have an inclination to break off into whorls after the fashion of the inflorescence of *P. Japonica*. The blossoms last well as cut flowers, and the plants make excellent house or window plants. During the summer months our plants set seeds freely and without any artificial assistance, but since winter began no seeds have set except where artificial assistance has been given. *W. F.*

Leptosyne Maritima.—A perennial composite with succulent stems and much divided fleshy leaves, and large showy bright yellow flowers produced singly at the ends of long slender stalks. The plant is indigenous to "Sea beach at San Diego, and on the islands."

I have grown this plant for a good many years, out-of-doors in summer and in the green-house in winter. Although it is a perennial it is treated as an annual, it begins to bloom when about four months old, and so long as it continues in good healthy condition, so long it will continue in bloom.

Planted out-of-doors in summer it grows and blooms prettily, but here it does not bear as fine flowers as it does in the green-house in winter. Our plants are in six-inch pots, in a sunny green-house, with a night temperature of about fifty degrees, and they now have been in full bloom for more than three months. This *Leptosyne* loves sunshine and will not thrive in the shade; and it very much dislikes a close, moist atmosphere or an over-wetted soil.

The blossoms are well adapted for cut flowers and last in good condition for several days after they have been cut; but as they are apt to partially close up at night this weighs heavily against them.

L. Stillmani and *L. Douglasii* are both Californian annuals, pretty enough in their way, but small and short-lived, and without anything of the bold, showy character of *L. Maritima*. *F.*

Carnations.—James Y. Murkland is the brightest scarlet we have, but the flowers are not full and solid enough or the plants sufficiently abundant or enduring to justify its use as a main crop. Portia is our stand-by for scarlet. It is early, continuous, a great cropper and the flowers do not burst. Among scarlets, E. S. Hill gives superb promise. The plants are vigorous and the flowers unusually large. Marshal P. Wilder has very large flowers, but they are short-stemmed and the calyx bursts. My best white is Hinzy's. Started early and not pinched after June it begins to bloom in September and lasts in good condition till February. Peerless, Snowdon and De-graw do not do well here. Neither do Buttercup nor Astoria among yellows. Lydia, yellow striped with pink, is the best of its class. Columbia, after the same fashion, but with narrower

stripes, is an abundant bloomer, but the flowers are not very firm. La Purite, carmine, is a capital grower, and it blooms freely too, but the flowers burst a good deal. Charles Henderson, tall and very copious, has carmine fringed flowers, rather small, but of capital form. Kaiser William has violet purple flowers of good form and striking in color, but many ladies object to the shade. Petunia is a slender grower, but it bears a good crop of rose purple and white full double, though often ragged, flowers, which are much esteemed by ladies. Crimson King used to be our mainstay in its class, but it is beginning to fail. Black Knight still holds good. It is of slender growth. It blooms sparingly in fall and early winter, but as January advances it waxes in strength. Gibbonsii is the largest and finest of all our crimsons, but it is a late-blooming one-cup variety. May Queen, bright rose, is a lovely, perfect flower, and unlike most varieties of its class, the color of whose flowers soon fades, its flowers retain their bright color for several days after they have been cut. While Grace Wilder is a very pretty carnation and of a desirable shade of blush, the color soon fades. This variety is often rather refractory. *W. F.*

Brodicea (Triteleia) Uniflora.—This charming Liliaceous plant we grow in pots for decoration of the conservatory. For this purpose it is very valuable, especially at this dull season of the year, besides being very pretty. It flowers in great abundance (as many as fifty flowers may often be had in five-inch pots) and will last a long time in perfection. We give them the usual treatment of this class of Bulbs, viz.: good rich soil in well drained pots, liberal watering while growing, gradually drying off for the summer months and repotting in the fall. There are two or three varieties of this species, one a pure white. It was introduced from Buenos Ayres in 1836. *F. G.*

Grapes Under Glass.

OUR early vinery contains, mostly, Black Hamburg; our medium, Muscat of Alexandria; and our late, Lady Downes, which I think is the best of all late grapes. Lady Downes, Black Alicante, Gros Colman and other late sorts will succeed pretty well when grown in the Muscat house, but I much prefer growing them in a house by themselves. I have Alnwick Seedling growing in the same house, and alongside of Lady Downes. It sets as freely as does a Black Hamburg and produces large blue-black berries and bunches of three to seven lbs. each in weight, but the grapes do not keep long after they are ripe. Indeed, I have, every year, to begin cutting them before I have cut half of our Muscats. Except for exhibition purposes I do not regard it favorably, but it will make a good enough stock on which to inarch more serviceable sorts. Black Alicante like Lady Downes always hangs on the vines plump and fresh till New Year's. Pearson's Golden Queen is a good-looking grape, but of little merit except for exhibition. After having given it a fair trial, both as an early and a late grape, I have concluded to discard it.

After the fruit is ripe in the Muscat house I bring *Dendrobium Wardianum* and others of its class into it to ripen their flowering pseudo-bulbs. I also use the earliest vineries for Chrysanthemums in the fall, but I never bring these in before all the grapes are cut, and I remove them before we begin to give our vines their annual cleaning. On no account do I ever allow any plants to be kept in or brought into the Lady Downes house, as the extra moisture they would induce would be detrimental to the keeping qualities of the grapes, which we wish to have in plump and good condition as late as possible—usually till January. I never permit any bedding or miscellaneous green-house plants, apart from those mentioned above, to be kept in any of the graperies under any circumstances, so as to avoid all possible chance of the introduction of mealy bugs or other insect vermin.

Of recent years we have discontinued the use of the syringe in our vineries except in the case of our earliest house, and in that we discontinue syringing as soon as the grapes begin to color. After the fruit is cut from it, however, we give the vines a few heavy drenchings of a solution of whale oil soap and tepid water—about two ounces of the soap to the common wooden pailful of water, and applied about sunset.

On account of the small amount of fire heat we use to help ripen the fruit and wood, we are not troubled with red spider.

We use tobacco stems as a preventive against thrips, placing them on the border between the bottom ventilators and the front row of pipes, and in this way use at one time a barrel of stems to every sixty feet in length of house. We renew the tobacco stems three times during the summer, and each time have them fresh from the cigar factories.

David Allan.

The Lawn.

NOW is the time to attend to the lawns. If they have been top-dressed with manure or compost over winter, on some fine dry day when it is not frozen, go over the lawn with wooden-toothed rakes and spread the dressing equally over the ground. Then repeat the operation and rake off all sticks, stones and other rough things that may have been in the dressing, but do not rake off any of the manure except where it may be so heavy as to threaten interference with the mower in summer. If this is done now, there will be no fear of the grass bleaching under the manure where it has fallen in lumps, but if delayed till the grass begins to get green it will bleach, then sun-scald and look patchy.

Lawns that have not been top-dressed should also be raked over with close-toothed wooden or iron rakes, so as to clear off the loose dead grass and other *débris* that would interfere with the mower. In raking the lawns be very particular along the borders of roads and pathways, where small stones may have been thrown up on the turf.

If the dead grass is long or shaggy burn it off. This may be heresy in the eyes of theorists, but experience has proved it to be good practice. The burning does not injure the crowns of the grass in the least degree nor destroy a particle of the nutriment on the surface of the ground, but it effectually gets rid of the dried grass, which, if not removed, would clog the mowers and weaken the young shoots in coming up.

If the surface of the lawn has any depressions fill them up with loam. These may be the foot-prints of men or animals made when the ground was soft. And some morning when the lawn is wet and soft go over it with a heavy roller to make the sod smooth and even; but never use horses in the roller when the lawn is in this condition, as their feet would leave deep impressions in the ground. With two men and a hand iron roller all the grass in the narrow places, as between the trees and shrubs, can be reached, and in the open spaces eight men to a large iron roller do capital work.

Many spots in the lawns will need patching. Where trees or rocks, in former years, have been dug out, the earth may have sunk so as to form a hollow; fill up such places with loam, and resod. And where little hillocks occur on the lawns, shave them down and replace the sod.

Sometimes weeds kill out the grass. The most destructive of these pests are Yarrow, Mouse-ear Chickweed and Sorrel. They kill out broad patches, and can only be overcome by being dug under or cut out, and again resowing or sodding the ground to grass. Crabgrass is almost invulnerable. So long as we keep our lawns smoothly shaven we cannot subdue it, for in September and October it spreads its wiry stems along flat on the ground and perfects and scatters its seed for the next season's work. The only way to get rid of it is to pasture the land or so encourage the lawn grasses to grow that they shall choke it out.

Where the lawn is mossy, as in the neighborhood of trees, or rather bare of grass caused by impoverished land or drought, remove the moss with a sharp long-toothed iron rake and loosen the surface of the ground; then topdress thinly with rich earth, and sow some red topseed on it, rake it in and roll firmly.

Where it is needful to do repairing, as for example, to mend the borders along the roadsides, to cover places caused by recent tree removals, to turf over beds, mend banks about the house, and the like, always use sod in preference to grass seed. Where much sod-laying has to be done a sod-cutting machine should be used, but in small places where the sods are cut with a spade never let two or more men work for the same piece of ground, as no two men cut sods alike. With the ground properly prepared and leveled, and the sods all equal in thickness, length and width, in laying them it is an easy matter to make a neat piece of work. All sodding and seeding should be done as early in spring as possible, in order that the grass may be well up and have a good hold upon the ground before the warm dry weather sets in.

William Falconer.

DO NOT HURRY to uncover the Roses, Strawberries and other plants that you have protected over winter. A few bright, warm days in March is no indication that the winter has completely retired; the frosty, searing winds of March are more injurious to plants than is the zero weather of January.

GARDEN LABELS.—The frost will have thrown many small labels out of the earth and we will now find them lying on the surface of the ground. If this is neglected the wind will blow them about. Stick them into the ground where you find them lying.

The Forest.

Forest Trees for California.

A GLANCE at the forest map of California, given in Vol. 9 of the Report of the Tenth Census, shows that there are in the State but two compact bodies of timber; that of Pines and Firs covering the higher western slopes of the Sierra Nevada, and the Redwood belt stretching along the western portion of the Coast Range, from the bay of Monterey to the Oregon line. The lower foothills of the Sierra, and the plateaus and northern slopes and cañons of the Coast Ranges, bear a scattered growth of timber; but neither the quantity nor the quality entitles it to be counted on for more than a scanty supply of firewood, after the needs of the first settlers have been met. The great valley, and the adjacent slopes on either side, are practically treeless, except along the courses of the streams, and on the exceptional area formed by the delta of the Kaweah River, in Tulare County, which is covered with quite a compact growth of the White Oak (*Quercus lobata*). A scattered growth of the same Oak prevails in most of the Coast Range valleys, outside of the Redwood belt; on the rolling lands near the coast, it is intermingled with the California Live Oak (*Q. agrifolia*) and the Black or Sonoma Oak (*Q. Kelloggii*). Along the Sierra foothills it mingles with the Blue Oak (*Q. Douglasii*); higher up it disappears and the Blue Oak with the two mountain Live Oaks (*Q. Wislizeni* and *Chrysolepis*) and the Foothill or Digger Pine (*P. Sabiniana*) prevail. These, with occasional groups or individuals of the beautiful Madrone (properly Madrono—*Arbutus Menziesii*), a few Firs on the higher levels, and in the cañons the large-leaved Maple (*Acer macrophyllum*), the Box Elder, the large Alder (*Alnus oblongifolia*), and last but not least the Laurel (*Umbellularia Californica*), constitute the common tree growth of Central California that, outside of the timber belts first mentioned, might be expected to serve the common uses of the deciduous forest trees of the Atlantic slope. To these are added, in the northern portion of the State, a part of the Conifers of Western Oregon; while in Southern California, a number of trees mentioned above are wanting, or but feebly represented, and the mountains as well as the valleys are as a rule scantily timbered, and largely quite bare of trees.

Even were these trees mentioned as well adapted to the uses of every day life as those of Eastern deciduous forests, their relatively scanty occurrence within that portion of the State best adapted to dense settlement would render the maintenance of the timber supply a question of the most pressing importance. But as a matter of fact the wood of most of the native non-Coniferous trees, and especially that of the lowland Oaks, subserves but indifferently any purpose save that of fuel. Not only have the trees as a rule a very low trunk, beginning to branch from seven to fifteen feet above ground, and often losing the leader; but even the "clear" wood is mostly so brittle and its grain so uncertain that to split it into rails, clapboards or staves is out of the question. When a tree is broken off by the wind, instead of the long, elastic splinters projecting from both ends, we find rough, jagged breaks almost square across. Of the California Live Oak, the wood-choppers sometimes state with mild exaggeration that it splits crosswise about as readily as lengthwise. The White Oak is a little better, and like the Blue Oak is sometimes used for fence posts; but even in this dry climate they show little durability as such. Only the mountain Oaks can to a certain degree subserve the ordinary purposes of hardwoods; and no Californian tree, save perhaps these, could be successfully worked into axe helves, hoe handles, or other agricultural implements of any durability. The Maple, Ash and Laurel are to some extent used for furniture and inside finish, but not where strength of material is required. Practically all the hard woods used in California must be imported, and at present come from the Eastern States; a small part, for cabinet and decorative work, from Mexico.

It is thus natural that when trees have to be planted, the preference should be given to such as are likely to supply this great need, and it is equally natural that the first thought should turn toward the familiar Eastern forest trees that serve these purposes so well. Thus the seeds of the Hickories, and of the White and other Eastern Oaks, soon found their way into private grounds and nurseries for trial. It may be broadly said that the outcome of these experiments (repeated since on the experimental grounds of the University of California) has been eminently unsatisfactory. The young trees not only refuse utterly to avail themselves of the longer growing season for more rapid development, but show a perverse disposition to branch out low and form bushes without a definite trunk; and when pruned up with a view to forming a single strong trunk, will sometimes return to first principles by sending up shoots from below. I doubt whether there exists at this time in the State, a specimen of an Eastern Oak or Hickory that would not have been better developed almost anywhere east of the Mississippi River, at the same age.

Not all the deciduous forest trees of the Atlantic States, however, behave in this way. Thus the Cork Elm, the Linden, several Maples, the White-wood (*Liriodendron*) and some others, develop normally, and some of them somewhat more rapidly than in their native clime. But none of these can properly fill the gap left by the Oaks and Hickories; and hence, substitutes for these have been sought in other climates, notably in Australia, whose rapid-growing *Eucalypts* and *Acacias* have already acquired a wide distribution in California. Oddly enough, some trees from diametrically opposite climates seem also to adapt themselves to that of California, and most promising among these, at the present time, is the European or "English" Oak (*Q. Robur*, var. *pedunculata*).

E. W. Hilgard

Growing Deciduous Forest Trees from Seeds.

WE sow all of our tree seeds in Spring, and as the following rules are based on our own experience, they all apply to spring sowing.

WHITE ASH seeds ripen in early October, and fall after the first severe frost. They should be mixed with moist sand, and not allowed to become dry before sowing. This same treatment should be followed with all the native Ash family with one exception, viz., the Green Ash, which hangs on longer and will germinate if sown dry; all others will remain dormant until the next season, if sown dry.

HARD MAPLE seed ripen early in October, and require the same treatment as the White Ash.

SOFT MAPLE seeds ripen in spring immediately before, or about the time, that Apple trees begin to blossom. They should be sown within a few days after gathering.

ELM seeds ripen in spring, and they require the same treatment as those of the Soft Maple.

BLACK WALNUTS, and all nuts with a pulpy covering, may be spread in thin layers, say six inches deep, and covered with sods and litter to prevent drying during the winter, in which case the pulpy covering will be easily disposed of in spring.

Other *Nuts* and *Acorns*, together with seeds of the *Tulip tree* and *Basswood*, are safer treated as recommended for Ash and Hard Maple seeds.

CATALPA and AILANTHUS seeds are kept dry during winter and sown rather late in spring.

BIRCH and ALDER seeds are kept dry, and sown dry early in spring.

LOCUST seeds and those of all that family are kept dry through winter and soaked in hot water immediately before sowing.

All seeds with a fleshy covering, such as Apple, Cherry, Mountain Ash, Cucumber tree, Buffalo Berry, Red Cedar and Holly, are washed free from the pulp, mixed with sand and sown in spring. We make an exception generally with the Red Cedar and the Holly, as they never germinate evenly in the spring, therefore we bury them in a rot-heap during two winters and one summer, and sow the following spring.

POPLAR and WILLOW seeds are very fine and delicate, and require skill, close attention, and continual moisture during the early part of the season. Therefore it is cheaper and surer to raise them from cuttings than from seeds.

All seeds mixed with sand must be placed so that water will not stand around them. Frost will not injure them, unless in a position where they will freeze dry. A cool shed where they are protected from sun and wind, will be a proper place.

Robert Douglas.

Answers to Correspondents.

Cutting down Chestnut seedling trees from sixteen to twenty inches in diameter, I find them rotten at the heart. What is the cause, and how may I know when the decay begins?

Sharon, Conn.

J. L. D.

The disease known as heart-rot, and under other names, which produces a decay in the centre or heart of trees, mostly older trees, is caused by various fungi, which attack the tree either from the root or above ground. While the precise progress of the disease is not yet fully understood, there seems no doubt, that other causes predispose the tree for the attack of the fungus; a dying or dead root, or the stump of a broken branch give usually entrance to the mycelium of the fungus. Unfortunately, neither the beginning nor the progress of the deterioration, which is the consequence of the fungus growth, is readily observed, since the tree, attacked only in the old, inactive wood, shows no outward sign of interior disease in its general appearance, and the fungus may do its destructive work for years without fruiting, by which alone it makes its existence apparent externally. Whenever a fungus (fruiting) appears on the stem, especially on the scar or stump of a broken branch, or near the foot of the tree, it is usually the sign of a heart-rotten tree. This disease is often the consequence of injudicious pruning of older trees, and should induce a more careful use of the pruning knife; shallow soil with hard-pan subsoil, especially if subject to overflow, is also conducive to this disease and necessitates earlier utilization of the timber to avoid loss.

B. E. F.

Recent Publications.

Gleanings in Old Garden Literature, by W. Carew Hazlitt. New York: George J. Coombes, 1887. Reprinted from the English Edition.

This book on Old English Gardens is a charming new volume—one of that charming series called *The Book Lover's Library*, which is issued in England, but also in New York, by Mr. George J. Coombes.

It is a small volume, written in a bright and unpedantic style, yet the amount of curious information it contains is immense. Early herbals and physic gardens, kitchen, window and cottage gardens, and orchards are described, together with methods of bee-keeping and wine-keeping. The herbs and vegetables, the flowers and trees which the Englishman of former generations loved, are named. Bacon as a gardener has a chapter to himself. The way in which Bacon and Shakespeare spoke of the Strawberry forms the text for a delightful little essay. Elizabethan gardening, the French and Dutch schools, Evelyn and his "Sylva," Walpole and the gardeners of the eighteenth century—all these are successively discussed by the aid of numberless citations from rare and quaint publications; and, in short, nothing which relates to the craft of gardening or the love of flowers and plants in the olden time has been overlooked by this industrious yet lively author. The wide extent of his acquaintance with the by-paths of literature is proved on every page, and a valuable bibliography of English works on gardening published between 1603 and 1800 brings his volume to a close. As an appendix he adds, moreover, a reprint of Gibson's "Account of the Gardens in and round London," which was written in 1691.

It should be explained that Mr. Hazlitt's book contains small reference to gardening as an art in the wider sense—to what we call to-day Landscape Gardening. Individual plants and the methods of cultivating them are his concern, and the old books which would be most useful to the landscape gardener have no place in his lists. But within its own field his book seems complete, and it should find a place on the shelves of every horticulturist who has a soul for the history and literature of his favorite recreation and an eye for a pretty volume.

Flora Peoriana. The Vegetation in the Climate of Middle Illinois, by Frederick Brendel; pp. 1-89; Peoria, 1887.

We cannot do more than call attention to this interesting paper, the result of thirty-five years' study of the vegetation of a small area of about thirty-five square miles, by an excellent botanist and observer of nature, who explains in his preface that "it is intended to show how local floras should be treated to be useful to phytogeography; how notice should be taken of soil and climate to understand the vegetation of a certain

floral district." The hope that the author expresses that this publication will lead to similar studies in other parts of the country will be shared by all students of geographical botany.

Shade and Ornamental Trees Suitable for Cultivation in Queens Co., N. Y., by William Falconer. Reprinted from the Annual Report of the Queens County Agricultural Society, 1887; pp. 21.

This is not, as might have been expected from the title, a mere list of trees hardy on Long Island, but a carefully prepared essay on ornamental and street planting, with suggestions of the best trees to be used in different situations and for different purposes and with many sensible cultural directions which planters will find useful. It is pleasant to note that Mr. Falconer is a firm believer in the ornamental value of our native trees.

Trees of Reading, Mass. Part I.; by F. H. Gilson; Reading, 1888.

Mr. Gilson has had the happy idea of photographing and collecting historical information and valuable statistics in regard to the most remarkable trees growing near his home, and the still happier idea of allowing the public to share in the results of these studies. Part I. of this work now published contains beautiful heliotype portraits of five trees with accompanying letter-press. The Sassafras No. 2, with a trunk girth at the ground of 10ft. 3in., will probably prove to be the finest specimen in the Northern States, and No. 4, the "Nehemiah Bancroft Elm," is as noble a specimen of the American Elm as is often seen. Very fine, too, are a second Elm and a wide-branching White Oak. The cultivated cut leaved weeping European Birch, which completes this first series, seems out of place in this company, and such a work might more wisely be devoted to native trees. Of these there are still many noble specimens left in different parts of New England, and Mr. Gilson will confer a real benefit upon all tree lovers if he will extend the field of his studies to other parts of the country.

Public Works.

Tree Planting on Boston Harbor.—An interesting report has lately been made by Mr. Frederick Law Olmsted to the Commissioners of the Boston Department of Parks on the subject of planting the islands and headlands of the Harbor. The shores and islands are characterized by great variety of form, and they are picturesquely disposed, making intricate straits and vistas opening towards the ocean. One drawback to the attractions of the Harbor is the bleak aspect of the bluffs and islands, and it is plain that if they were wooded or clothed with foliage or verdure of any kind the scenery would be much more agreeable. On even the most exposed and rocky of these islands stumps remain to prove that they were once tree-clad, but since they have been cleared, a second growth has been prevented by pasturing animals. Deprived of forest protection the land has been losing fertility, as it has been exposed to the winds and salt spray, and the Harbor is every year being despoiled more and more of its original beauty. It is thought that if trees of the species which formerly flourished here were planted with suitable undergrowth they might help each other to endure the hardships of the place. In a very few years these young plantations would give a pleasing softness to the elements of the scenery which do not contribute to its picturesque ruggedness. When the plantations have attained a full-grown forest character the broad masses of foliage will lift the skylines of shores and islands, add to their variety of tint, and deepen their shadows. Of course such trees as are usually planted in lawns, parks and cemeteries could not be used successfully, but Mr. Robert Douglas, who has had a wide experience in planting trees under trying conditions, and who has studied the Massachusetts coast plantations made by Mr. Joseph S. Fay and others, has faith in the project and offers to take a contract to carry it out. Mr. Douglas will engage to plant the entire area, some 400 acres in extent; to care for the trees until they are well established, in thrifty condition and shading the ground completely, so that they will need no further cultivation. Payment is to be made in installments, the last one, sixteen per cent. of the whole amount, due only when 800,000 trees are certified by qualified agents appointed by the Park Department to have been found on the ground well rooted and thrifty. By the terms of such a contract the young trees would have the care of one of the most successful planters in the country during the most critical period of their history, and the risk to the city would be reduced to its lowest terms. It is thought that \$5,000

a year, for six years, to be used at the discretion of the Park Department, would be sufficient to insure a substantial success.

Flower Market.

NEW YORK, *March 2d, 1888.*

There is a decline in the price of flowers, excepting in a few sorts which appear unusually well grown. Weigela is the novelty of the week, it having been forced by a New Jersey plantsman. It sells for 25 cts. a long spike, and is highly esteemed by decorators. Hybrid Roses are plentiful, but their average quality is not satisfactory. The choicest are sold for \$1 each. Baroness Rothschild and Mabel Morrison have appeared. Selected American Beauties are also \$1. The favorite Gloire de Dijon Rose arrives in limited quantity and sells for 50 cts. a flower. Puritan Roses sell for 50 and 75 cts., and La France from 25 to 50 cts., according to quality. Perle des Jardins, Niphetos and Souvenir d'un Ami are down to \$1.25 a dozen, and Brides bring 20 and 25 cts. a flower. Maréchal Niel Roses are to be had for from 25 to 50 cts., the latter priced ones including a bud. Acacia has never been so plentiful and low-priced. It brings one-third less than it did last season. A good-sized branch may be had for \$1, and 25 cts. will buy what is termed "a spray." Carnations are selling for 50 cts. a dozen, excepting such varieties as Grace Wilder, Buttercup, Dawn and Harrison, which, when long-stemmed, sell for 75 cts. a dozen. Spikes of Mignonette, very large and beautiful, bring 35 cts. each, and smaller spikes cost from 10 to 25 cts. Callas are 30 cts. each, and Longiflorum Lilies from 40 to 50 cts. *Lilium Candidum* has just appeared, and sells for \$2.50 and \$3.50 a dozen. A single stalk with two flowers and a bud sells for 50 cts. Violets cost from 75 cts. to \$2 a hundred. The latter is the fancy price for those fresh-picked and brought in at certain hours daily. French Marguerites are of two qualities, those small, with fragile stems, which cost 25 cts. a dozen, and those of twice the size, on firm long stems, which bring 50 cts. a dozen. Double Tulips are in more active demand than other varieties. Tulips remain as last quoted, as do other flowers not mentioned above. *Asparagus plumosus* is used more freely than ever before because in greater supply. *A. tenuissimus* has somewhat given way to the former variety in popularity. For yard lengths *A. plumosus* costs \$1, and *A. tenuissimus* from 60 to 70 cts. Smilax brings 40 cts. a string. The cut flower trade has been active since the second week in Lent, Jewish weddings, dinners and luncheons having kept business stirring. Orchids are in steady request for table decoration. They do not fluctuate in price. They are to be ordered from all the first-class florists, but a variety is only kept on hand by those who have growing collections. Prices range from 50 cts. to \$1 a flower, and for sprays from \$2 to \$5.

PHILADELPHIA, *March 2d.*

The demand for flowers the past week has been fair, for the Lenten season. Jacqueminot Roses are more plentiful, prices ranging from \$3 to \$5 per doz. Mrs. John Laing is becoming more abundant, selling at the same price as Jacqueminots. Anna de Diesbach and Magna Charta may be had in limited quantities at from \$4 to \$6 per doz., but these darker shades of pink are not so popular in this city as the more delicate tints, like those of Madame Gabriel Luizet or Mrs. John Laing. American Beauty is preferred, when the darker colored sorts are required. *Asparagus tenuissimus* is not popular here. This is difficult to understand, because it is so delicate and lasts so long for room decoration. For festooning about mirrors few plants are more effective. Gardenias may be had in limited quantities at 25c. each. Marguerites and English Daisies are in fair demand at 25c. per doz. Perles have been overdone this season. Sunsets are more popular.

BOSTON, *March 2d.*

The weather has been wintry during the week and while it continues cold there will be little change in the prices of cut flowers. Some varieties of Roses, especially La France and Catherine Mermet, have been really scarce, an unusual feature of the market at this season. Violets are abundant and consequently cheap. Pansies are also becoming more plenty and the quality was never better. Long stemmed Carnations have seldom been seen here in such perfection and variety as at the present time. They are gaining rapidly in popularity, for buyers are beginning to appreciate them and are learning that there are few varieties of flowers which will keep so long in a warm room. Its own foliage is of course the best setting for the Carnation. Daffodils, Tulips and Lilies-of-the-Valley are still offered in large quantities. Great vases of Callas and *Lilium Harrisii* make a grand display in all the florists' windows and are a reminder that Easter will soon be upon us. Spiræa and Deutzia, which are always grown largely for Easter, are also beginning to come in in moderate quantities. The best Jacqueminots and Hybrids can be had now at from \$4 to \$6 per doz. La France, Catherine Mermets and Marechal Niels at \$3. Perles des Jardins and Niphetos at \$1.50 and the small Teas at 75c. per doz. Hyacinths and Tulips cost 75c., and Lily-of-the-Valley and Trumpet Narcissus \$1 per doz. For finest long-stemmed Carnations 75c. per doz. is asked, while Pansies, Mignonette, Calendulas, etc., can be had at 50c. per doz. Callas bring 15c. to 25c. and Harris's Lilies 35c. each. A fine box of choice Orchids with a slight sprinkling of Maiden-hair Ferns, Asparagus and a few dainty sprays of Heath, makes a superb gift and costs from \$25.00 to \$50.00.

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The Future of Our Forests.

THE forests of the United States play an important part in the economy of the nation. Their annual product far exceeds in value any of our great staple crops of the field. The gold and silver mined in the country is insignificant in value compared with the money value of the forest crop. It is difficult to picture the commercial and agricultural ruin which would follow any general disturbance of the productive capacity of our forests. No other country could supply us with the material we should thus lose, and we should lose, too, something more important even than the material they yield. Forests are often much more than storehouses of growing timber. They are essential in some parts of the country to insure the integrity of mountain slopes and the preservation of important rivers; and the destruction of mountain forests is invariably followed sooner or later by serious physical calamities.

The forests of this country are rich, varied and extensive. They still contain vast stores of many valuable timbers. In some of the most important forests serious inroads, to be sure, have already been made, and the practical extermination, from a commercial point of view, of some of our most valuable timber trees, now seems inevitable. Much of our country nevertheless is perfectly suited in soil and climate to rapid and vigorous tree-growth. The forests which once extended in an unbroken sweep from the Atlantic to beyond the Mississippi and which still cover the great mountain ranges facing the Pacific, clearly show the capacity of this country to produce forests unequalled in value by those of other parts of the world. It is only in the interior portions of the continent, insufficiently supplied with moisture, where the forests are scanty or altogether wanting, that their reproduction and extension offer any serious difficulties. Everywhere outside the dry belt, forests

can be grown and extended with ease and rapidity if the simplest laws of nature are observed. And there is land enough in the United States suitable in every respect for forest growth, but utterly unfit for agricultural use, to supply with forest products any possible population this country can contain.

But in spite of these natural advantages, in spite of the variety and value of our forests, all thoughtful persons familiar with their present condition and the dangers which threaten them under existing social conditions, must be filled with apprehension at the almost inevitable destruction of their productive capacity.

Americans are still surprisingly ignorant in regard to their forests and the simplest laws which should govern their management. This indifference is astonishing. We cut recklessly and often needlessly; and often fail to cut when cutting is essential. Fires are allowed to run unchecked year after year through the forest or to sweep over land upon which new forests would naturally appear. Cattle and other domestic animals range at will through the woods, injuring trees and exterminating seedlings. Our civilization and our foresight as shown in the care of our forests, is the civilization and the thrift of France two centuries ago. In no other civilized nation of the world are forests so recklessly managed.

Americans are impatient of any restraint or interference in the management of their property. And yet unless American land-owners, like the land-owners of nearly every other civilized people—Great Britain now being the only important exception—are willing to submit to laws, regulating under proper official control the cutting of their forests and the use of their land for agriculture or forest, according to its quality, we must not expect to keep up our forest supplies. These supplies are still enormous, but no forests, whatever their extent or richness, are inexhaustible. As one of the wisest observers of all social problems and one familiar, too, with the requirements of the forest has pointed out in another column of this issue, the condition of public sentiment required to make a proper management of our forests possible, will develop slowly. Americans as a nation need instruction in the laws which govern forest growth and forest management. This lesson they will not learn readily or quickly, and it is probable that they will not learn it thoroughly until compelled to by dire necessity.

Hardy Rhododendrons.

THE cultivation of hardy Rhododendrons, especially varieties of the race which English gardeners have produced by crossing the American *Rhododendron Catawbiense* with different Himalayan species with highly colored flowers, like *R. arboreum*, has greatly increased in this country of late years. Many Americans, probably, first learned the beauty and value of these plants for ornamental gardening at the Centennial Exhibition in Philadelphia, where an English nurseryman displayed under canvas a large and well arranged collection of the best varieties. That we know so much about these plants here, and have learned which can and which cannot be successfully grown in the United States, is very largely due, however, to the experiments in Rhododendron culture long carried on by Mr. Hunniwell in his beautiful gardens at Wellesley, in Massachusetts.

The cultivation of these Rhododendrons is very simple. They thrive best in deep peaty soil, and when placed so as to escape the stimulating influence of the warm sun of early spring. Impatient of drought, Rhododendrons in this country give the best results when planted in situations which never become thoroughly dry in summer, like the borders of ponds or swamps, or in which they can be freely and frequently watered; and in order that they may bloom well they should not be placed under the immediate shade of overhanging trees. No plants are

more easily transplanted. The cultivation of Rhododendrons, however, must always be restricted in the United States to a comparatively small area. A limestone soil is fatal to them. All attempts to introduce them west of the Hudson River have failed, therefore, and even along its eastern bank they have never grown satisfactorily. North of Massachusetts the winters are too cold, while south of Pennsylvania they cannot support the hot, dry summers of the seaboard region. They will probably succeed anywhere in Pennsylvania east of the mountains; but some day it will be found that they can be more successfully grown in the mountains of Virginia and the Carolinas, where summer droughts and excessive cold are unknown, than in other parts of the country. Here is the true home in America of broad leaved evergreens, and here sooner or later will be seen a garden of these hybrid Rhododendrons, only surpassed in splendor by that natural garden where the native Rhododendrons spread in countless thousands over the upper slopes of the noble Roan Mountain.

The question is often asked, Which varieties of these hybrids are hardy? The following list embraces the best of those which have for many years proved perfectly hardy in the climate of eastern New England: *Everestianum*—with rosy lilac flowers—one of the oldest and freest blooming of the whole race, unequaled in habit and beauty of foliage; *Lady Armstrong*, pale rose; *Charles Dickens*, dark scarlet; *Album elegans* and *Album grandiflorum*, pale blush; *Charles Bagley*, bright red; *Delicatissimum*, later in flowering than many of the others—the flowers blush, tinged with pink towards the margin of the petals; *King of the Purples*, a free blooming variety of good habit, with rather dark purple flowers; *H. W. Sargent*, a very late bloomer with large trusses of crimson flowers, but rather defective in habit; *Roseum elegans*, an old and long tried variety of excellent habit; *Purpureum grandiflorum*; *Mrs. Milner*, crimson; *Alexander Dancer*, the flowers fine and large, rose, with a light centre, but the habit of the plant not good; *Hannibal*, a late blooming variety with rose-colored flowers.

There are other varieties no doubt which are hardy in Pennsylvania, or on Long Island where a great deal of attention has been given to the cultivation of these plants.

— — —

Sir Joseph Hooker, of all his contemporaries, can speak with the greatest authority of the position of Asa Gray, in the hierarchy of botanists. The friendship of these two men, the one English the other American, extended over a period of fifty years. The sympathy which existed between them was never broken, and to no one else did the American botanist write so constantly or so freely. The following extract, therefore, from a sketch of our associate's life, by his English friend, printed in a recent number of *Nature*, is of peculiar interest:

"When the history of the progress of botany during the nineteenth century shall be written, two names will hold high positions—those of Professor Augustin Pyrame De Candolle and of Professor Asa Gray. In many respects the careers of these men were very similar, though they were neither fellow-countrymen nor were they contemporaries, for the one sank to his rest in the Old World as the other rose to eminence in the New. They were great teachers in great schools, prolific writers, and authors of the best elementary works on botany of their day. Each devoted half a century of unremitting labors to the investigation and description of the plants of continental areas, and they founded herbaria and libraries, each in his own country, which have become permanent and quasi-national institutions. Nor were they unlike in personal qualities, for they were social and genial men, as active in aiding others as they were indefatigable in their own researches; and both were admirable correspondents. Lastly, there is much in their lives and works that recalls the career of Linnæus, of whom they were worthy disciples, in the comprehensiveness of their labors, the excellence of their methods, their judicious conception of the limits of genera and species, the terseness and accuracy of their descriptions, and the clearness of their scientific language."

Laws Alone Cannot Save Our Forests.

THE greatest obstacle in the way of a rational and practical treatment of the subjects and interests connected with Forestry in this country is the lack of thought among our people. There are reasons for this want of thought, and it is well to understand the facts of the existing condition of things. Most Americans are busy in making a living, and their energies are entirely applied and absorbed in business pursuits, so that they have no force or energy which remains unemployed, or which can be spared from the occupations which already engage their powers. There are many other persons who have not been taught or trained to think on any subject. They have no ability to represent to themselves, by the picture-making power of the imagination, any subject which has the least complexity, or any scheme of facts and of their relations to each other. They cannot consider such a subject, cannot compare or classify facts, or draw inferences from them. This want of the power of thought is one of the chief hindrances to our advancement in civilization.

The only constituency to which we can at first directly appeal in the effort for an intelligent treatment of Forestry subjects, is the class of men and women who have some power of thought, and whose personal force is not already wholly employed in affairs. They have some ability to direct their faculties to new topics, and have enough public spirit, or regard for the general welfare, to incline them to give attention to whatever can be shown to have vital relations to the interests of the community or of the nation. In order to reach this class of persons there must be a clear, vital, coherent, systematic and continuous presentation of the facts and essential relations of the subject in hand, with such variety of illustration, application and recurrence to the original central object and purpose as shall produce in the minds of readers a vivid and abiding impression and conviction of the true nature and importance of the doctrines which are to be inculcated, and of the practical objects which such teaching is intended to promote or secure. A vital, intelligent, comprehensive and iterant treatment of the subject of Forestry, and of the interests connected with it, is greatly needed.

Such treatment as this topic has hitherto received in this country has been mostly fragmentary, incoherent and vague. As it is usually handled the whole matter is too much "in the air." There is a good deal of hammering upon the importance of the general subject, without sufficient observation and comparison of concrete facts and conditions here in America. The study of European methods and results in Forestry by competent men is, of course, highly valuable, but it is not enough. It is not even the most important thing for us. Nothing can be very useful to us which is not based upon careful study of the facts and conditions which are peculiar to this country. We should have in time a system of American Forestry—we must have it, indeed, if we are to avoid serious disasters to our national interests and civilization. We cannot import and adopt ready-made European systems or methods. The Forestry of this country must be the product of growth which has, as yet, scarcely begun. It will be developed by continued and widespread observation, and by constant comparison of the results of practice. It is necessary to remind ourselves that no useful system of Forest management can be originated or created by legislative enactment. There must be considerable special knowledge, and considerable national good sense regarding the needs of this country, behind Forestry laws, or they will be not only useless but mischievous.

The work required to effect any considerable actual advance in Forestry in this country must be long and difficult. Such objects can be attained only by the development of such intelligence, thought and sentiment, in a considerable proportion of our population, as shall secure a sensible and practical treatment, in individual and collective action, of the whole matter of the relations of Forests and Trees to

human life and welfare. Whatever tends to a better understanding or appreciation of the value of Trees in their economic, sanitary or æsthetic uses and influences, will help toward the attainment of these objects.

J. B. Harrison.

Landscape Gardening.—III.

THE landscape gardener, we have seen, has a great advantage over other artists in that Nature is his helper as well as his teacher. His work is the same in substance as her own, which means that it includes in equal measure the charms of color and of form, of atmosphere and of light. It is alive, and so there lie within it possibilities of infinite variation with their sequence of ever new delights for eye and mind. And it may be as perfect in execution as in general effect, for Nature will give all those finishing touches which are impossible to the hand of man.

But does not this partnership with Nature deprive the artist of that most essential of all opportunities—the chance for self-expression? Art, after all, is not imitation but creation; and creation implies the exercise of the individual will, the revelation of the personal thought. Sometimes the artist begins within himself, sets his own ideal and finds his own conception, taking from Nature only his brute materials. The architect takes stones from her and the musician takes sounds; but she suggests no houses or cathedrals, no symphonies or chorals—scarcely so much as a shelter for the human body, scarcely more than hints of melodies and harmonies. At other times nature furnishes ideals and patterns but not the methods by which they must be transmuted into different materials. She shows us what the beauty of woman ought to be, but we must find out for ourselves how to paint it on flat canvas, how to reproduce its vitality and charm in colorless marble. Not in the one case more than in the other—not in the arts of representation more than in those of construction—can the artist copy. He must always interpret. To interpret means that he must invent; to invent means that he must use his mind; and, in truth, it is simply in using his mind that he gets the chance to be an artist. The less the beauty of his work depends upon mere imitative efforts, the more it depends upon qualities for which he is himself responsible—upon expression—the higher may be its rank as a work of art; and the more personal is the quality of its expression—the more unlike it is to the expression which other men have put into their works—the higher is his rank as an artist. Now it will be the expression of emotion, told through human forms and faces in moods of supreme intensity, moral, intellectual or physical. Now it will be the expression of a feeling for certain peculiar moods and effects of inanimate nature, or of a delight in some particular combination of colors or some especial kind of form; and again, the expression of a craftsman's pleasure in the mere problem: How can this richness of brocade, this sheen of marble, this softness of hair or cheek, be most perfectly translated into paint? It matters not what a man shows us as having been present in his heart while his brush was at work;—so long as he shows us something that was there, he is an artist. If he could make a literal, impersonal copy from nature it would not be worth the form it imitates. The only value it could have would be historical, not artistic—would be a permanent record of the perishable model. To make his work worth while as art, the artist must even the balance by putting himself into the scale.

If the landscape gardener were indeed denied the chance to do this he would merely be a more or less skillful artisan. But he is not denied it. In fact he cannot escape if he would from the necessity to use or abuse his opportunities for self-expression. It is no truer to say of him than of the painter or the sculptor that he copies nature. Though they simply work after her and he works in and with her, his aim is the same as theirs—to re-unite her

scattered excellences. Theoretically he could copy her in a very wide sense of the word; but practically he can copy little more than her minor details and her exquisite finish of execution. Composition of one sort or another is the chief thing in art, and the landscape gardener's compositions are and must be his own. Through them he may express his own ideals, and through them he may reveal himself either as having or as not having clear ideals, either as knowing or as not knowing how they may be realized. If he is Nature's pupil he is also her master. "Nature," writes Aristotle, "has the will but not the power to realize perfection." Turn the phrase the other way and it is just as true: "She has the power but not the will." In either reading it means that the man can aid and supplement Nature's work. He can bend her will in many ways to his though he must have learned from her how to do it. He cannot achieve anything to which her power is unequal, but he can liberate, assist and direct that power. He could even remove her mountains if the result were worth the effort; and he can blot them out of his landscape by the simplest of devices—by a clump of trees and shrubs which she will grow for him as cheerfully as though they were to hide some deformity of his own creation. He cannot make great rivers; but he can make lakes from rivulets and cause water to dominate in a view where she had meant green grass to rule. And he can even teach her to perfect details of decoration for whose beauty scarcely a hint is found in her unassisted work. All "florist's roses," for example, are not productions to be proud of; but there are some in which, sterile though they be, Nature herself may grudge man's skill its part.

M. G. van Rensselaer.

The Suburbs in March.

IN the suburban districts of our Northern cities this is the most dreary season of the year. The snow is gone or remains only in patches, the grass is dead and colorless, the houses in their forsaken inclosures seem to shiver—all is dishevelment and nakedness for a whole month at least. In the close-built city there is no such unhappy state of things. In the open country even March has its beauty. What is the cause of the repulsiveness of the half-way region at this season and what is the remedy?

Plainly we cannot throw the blame upon the severity or fickleness of our Northern climate, for how then could the country-side have any beauty about it at this time? The cause lies rather with ourselves, who have built streets and houses through the fields and woodlands, have in this way destroyed the original beauty of the land, and have as yet done little or nothing to win back what we may of it. In these fields and pastures grew a great variety of trees, shrubs and herbs, many of which attained their perfection only in summer, while others were especially striking in winter. Of the former our public and private grounds hold far too few—our sins of omission are surprising—but of the latter almost none. Where can be seen planted about homes the richly-colored Red Cedar, or prostrate Juniper, or Mountain Laurel, or Bayberry with its clustered gray fruits, or red-twigged Wild Roses, or yet redder Cornels, or golden-barked Willows? How seldom appear White Birches or any of the American Firs and Spruces! Where do any of the trailing evergreens cover the ground at the edges of shrubberies? Where are the houses which have bushes crowded about their bays and corners, as the wild bushes crowd the field walls, till they seem to be fairly grown to the ground? Where is any suggestion of those thickets of mingled twigs and evergreen which so adorn the pastures even in March? Speaking generally, we have reduced our bits of ground to mere planes of shaven grass, from which the house walls rise stiff and unclothed. We expend thousands of dollars upon the shell of our abode, and indefinite sums upon its interior appointments and decorations; but outside we generally leave it all bare and unbeautiful, and spend only for the gaudy brightness of Geraniums in summer. No wonder March is ugly in the suburbs!

The remedy, then, is the planting of appropriate and numerous shrubs and small trees. Beware of the "choice specimens," many of which will need to be protected by boards or straw during five months of the year, and avoid the common mistake of clothing the ground with single plants. This, at

any rate, is not the way to make March door-yards less bleak. Rather may we spend the same money in planting mixed and somewhat crowded thickets, here of high and there of dwarf bushes, along the fences and close about the house. To clothe the nakedness of the ground and of the fences and buildings should be our aim. Large trees, such as our suburbs are sometimes full of, cannot do this, neither can scattered specimens of smaller sorts, neither can sparse, stalky shrubberies; we must set our bushes thickly, so as to hide the dirt beneath them, and we must either carry the grass under them as far as possible or else cover the bare earth with trailing plants. This done, our yards and grounds will appear well furnished and sheltered, and no coming March will ever chill us as this present month has done. Moreover, when summer comes, we shall find we have exchanged our Geraniums for banks of foliage set with a succession of flowers which are much more interesting and will bloom season after season. Where house-lots are small and it is desired to spend a comparatively small amount on each, the neighbors could form clubs and secure plants at wholesale rates; but under any circumstances the cost of such planting is by no means so great as to excuse us from attempting it.

Boston, March, 1888.

Charles Eliot.

California Christmas Flora.

AFTER twenty successive winters on the northern shore of Monterey Bay, Cal., I may claim the privilege of saying something about our Christmas flora.

The winter season of this region is not so clearly defined as in more northern latitudes. The leaves of our deciduous trees forget to loosen and fall, and almost imagine themselves evergreen. And indeed some of them have carried their imaginings so far as to retain, oftentimes, the old leaves until the new ones are fully grown.

At Christmas time, however, Nature has called a halt. Some of the spring buds that were caught in the dry season, which begins about the middle of June, have expanded with our fall showers and have bloomed regardless of the season, so that at the close of the year there is often a profusion of many kinds of flowers—wild as well as cultivated. They are the arrears of the past season, and not the beginning of the coming year.

Some years ago the editor of a horticultural journal requested me to make a list of wild flowers in bloom on January 1st. I found about forty species. Since that time I have noticed that a majority of our native plants are liable to bloom at that season; first, from delayed buds on account of the dry season, and second, from premature spring buds forced out by the warm early rains and the mildness of the season. This is frequently noticed in Pear and Apple trees—they being strangers to our climate, seem to lose their reckoning and send forth flowers out of the proper season—although such a phenomenon occurs at times in more northern regions and away from the sea coast.

So many, then, of our plants, both native and introduced, may be found blooming at Christmas-time, that a list would be very long. In fact, there are but few which might not be found in bloom in favorable years and localities.

Consequently we have at Christmas, and later, Strawberries, Raspberries and sometimes other small berries. Grapes grow and ripen until that time; Tomatoes likewise. Most of the table-vegetables are young and tender even throughout the entire winter. Some tropical trees, and those brought from south of the equator, take on an active growth. And even early in January some of our indigenous plants send forth their flowers, especially those in warm, sheltered places, such as the Willows, Alders and Hazel. One Willow (*Salix flavescens*) is quite a surprise in January, when the trees, bearing staminate flowers, are usually out in full glow, like beautiful yellowish-white clouds, on the brushy mountain sides. A Lily (*Scoliopus Bigelovii*) to be found in bloom must be sought in January; and many times have I wondered where and when the flower might be found, until I discovered it thus early in the season and before its beautifully spotted leaves were fairly expanded.

The growth of our marine flora is similar to that of our land plants at Christmas-time. If storms have not raged severely we find many nice specimens of young plants in vigorous life and maturing fruit. And the "moss-gatherer" is often well repaid by the collections made at this season. The temperature of the sea is not much below that of summer; and but for the storms, vegetable life in our bay would continue almost uninterruptedly all the year.

A little further along and the accounts for the past year

are all balanced, and new leaves are opened for the new year. This change takes place at February 1st. That is our true beginning of spring. As the days grow longer the heat of the sun is stored in the fields and mountain sides, to be radiated during the clear nights, and the growth of vegetation advances slowly but surely to its culmination in May and June. The opening of spring flowers, however, is not as rapid as in the Northern States. With our cool nights and not very warm days, they come forth coyly, until quite sure that the earth has passed the tossings of Taurus and the stings of Scorpio. Then in May the lingering, bashful, yet beautiful flowers that slept over the Christmas-time, gladden the hearts of all lovers of these, the most lovely of Nature's gifts.

Santa Cruz, Cal.

C. L. Anderson, M.D.

Foreign Correspondence.

London Letter.

Our flower markets make just now a beautiful display with forced flowering bulbs especially. Every market-garden around London is a flower show in itself. I went through one of the largest yesterday. I was astonished at the brilliant scene. One house a hundred yards long was filled with nothing but Tulips, mostly single sorts, the favorites being scarlet, yellow-edged, Duc Van Thol, also the white, rose and yellow Van Thol. These make up the bulk, and of double sorts which are not popular in the market, the leading varieties in this nursery were the Tournesols, scarlet and yellow. To give some idea of the Tulip trade alone I may mention that one grower forces nearly 200,000 bulbs. They are packed in shallow boxes as closely as they can be laid and covered with light soil. When the buds are ready to burst the bulbs are either potted four or five together, with ferns, or the flowers are cut and sent to market. Another house was filled with Lilies-of-the-Valley also in flat boxes, the finest German crowns being preferred to English, as they throw longer spikes. The best strain of the flower in the market is the Victoria, which is controlled by a grower in the Thames Valley, where this particular sort grows to a great size. The spike is longer, the bells larger and the foliage more robust than in the common kind. Throughout the winter till Lilies-of-the-Valley flower outside, a lucrative trade is done in London with these flowers, which are *par excellence* the favorite for button-hole bouquets. In this same nursery I remarked the great abundance of the old white Azalea, represented by old plants that had done duty for years and had been hacked every year to the bare stem. Of course the plants were unsightly, but they were part of the working capital of the concern and yielded abundant and profitable blooms.

Your famous *Lilium Harrisii*, or, as it is commonly called here, the Bermuda Lily or Easter Lily, is becoming very popular among the market people. They cannot, however, get enough of it at their price. A ship load of bulbs could easily find sale about our London market-gardens. I saw a grower the other day who makes a specialty of *L. longiflorum*, of which *L. Harrisii* is, of course, only a more floriferous and dwarfer variety, and of *Calla Ethiopica* (Nile Lily we call it), expressly for Covent Garden market on Easter eve, April 1st. He grows thousands of each and this represents much capital. His aim is to get them in flower on March 31st to the day. He does not want to be made an April-fool, so he has to watch the barometer. Last week was Italian weather—sunny and warm—and he had to put the temperature down; this week is Labrador weather, with frost and snow; he must put it up again or his blooms will not open when wanted. His struggles with our climate are rather comical to the looker-on, but the matter is a serious one to him from a business point of view.

The Orchid men are just now sharply watching their flowers, especially those on imported plants that have not yet bloomed in this country. They anxiously await the opening of every spike, for often a plant bought for a crown at auction, by a peculiar arrangement of its flower spots or a deepening of its color beyond the ordinary, will bring £50. Some time ago it was said that Orchids were declining in popular favor, but the contrary is the case. New buyers may be seen at the auctions, men who never grew any plant in their green-houses rarer than a Scarlet Pelargonium, and they are turning out everything to give place to the popular favorites. This explains how such enormous Orchid establishments as those of Veitch, Sander, Bull, and Williams are kept going. But not only are the growers paying increased attention to Orchids, but botanists are influenced by the fashion (I was going to say craze). At Kew one of the assistants at the Royal Herbarium has been detailed specially for the work, which, however, is



FROM A BRONZE MEDALLION BY A. ST. GARDENS

— "LAND AND FOREST SUPPLEMENT" MARCH 12TH

chiefly that of correcting and checking the nomenclature, and tripping up the veteran German professor, Dr. Reichenbach, who for a generation past has held the monopoly of naming Orchids. One of our Orchid specialists attached to the St. Albans establishment has been taking notes in the Orchid collections about New York and has printed them in the *Gardener's Chronicle*, the result being that our growers here do not now think that Americans are such infants in Orchid culture as was fancied. Some of your collections there described would, I imagine, take equal rank with the best in England.

The Royal Horticultural Society held its periodical meeting of committees on the 14th inst. This will be nearly the last it will hold in the aristocratic quarter of South Kensington. The annual meeting held on that day decided that the society should vacate South Kensington as too costly to maintain, and a more modest home has been found for its offices, library, etc., further eastward. A stranger who could have seen the last meeting would hardly have thought the society in a moribund condition. The crowds of horticulturists constituting the committees, the profusion of flowers, choice and ordinary, and the plentiful collection of late apples, all tended to show how active horticulture is in this great centre, and that it is not for lack of interest or sympathy that the national society is not the largest and most influential in Europe.

The advent of spring was indicated on this occasion by the large gathering of spring flowers—Chinese Primulas, Cinerarias, Cyclamens, Camellias, forced Narcissus, and, of course, Orchids. The Orchids new and rare, choice and common, were plentiful. One of the most remarkable was a new hybrid *Dendrobium* (*D. Chrysodiscus*), a cross between another hybrid, *D. Ainsworthii* and *D. Findleyanum*. The distinct features of each parent are plainly seen in the progeny, especially in the large jointed stems, and the shape of the flower, which is as large as those of *D. Findleyanum*, with sepals and petals white, tipped with rose, and the shallow lip adorned with a broad blotch of yellow and ruddy crimson. Another *Dendrobium* certificated is considered among the most remarkable of new orchids. It is called *D. nobile Cooksoni*, being a variety of that old species. The flowers are like those of the type in size and form, except that the two lateral or side petals are shaped and colored like the lip, each having a heavy blotch of the richest maroon-crimson bordered with white. It represents what botanists call an instance of "trilabella," or thrice-lipped flowers. In other respects it does not differ from our old favorite.

A certificate was well bestowed upon an extraordinarily fine *Lycaste Skinneri*, named *Imperator*, from Sander of St. Albans. The flower is very large, the sepals broad and thick, faintly tinted with pink, the petals of a glowing crimson, and the lip of an intensely deep ruby-crimson, variegated with pure white. In contrast with this, the same exhibitor showed an exceptionally fine form of the white *Lycaste Skinneri*.

London, Feb. 25th.

Wm. Goldring.

Palms for House Decoration.

THE species belonging to the natural order *Palma* constitute a truly royal class of plants, justly entitled to Linnæus' designation, "Princes of the Vegetable Kingdom." They comprise various types of beauty; some of the stronger growing kinds (as *Latania Borbonica*) being of bold and striking outlines, the embodiment of sturdy grace; others having the lightness and elegance of the finer varieties of Ferns, as *Cocos Weddelliana*, *Geonoma gracilis*, and the like. The latter varieties are of miniature growth, and from their graceful and delicate forms are specially useful for table decoration, and form objects of the greatest beauty when standing alone on pedestals or small tables. The stronger growing and taller kinds may be used to advantage standing on the floors of rooms and in the hallways, or grouped in front of mirrors or windows. The increasing use of Palms and other pot plants for decorative purposes in this country is an evidence of the growing taste of our people. Beauty of form is of a higher type than beauty of color, and the graceful outlines of a tastefully arranged group of Palms give a higher satisfaction than the immense banks of cut flowers we sometimes see. Cut flowers, used with judgment, are always welcome, but they should not be crushed together, so that the individual forms are lost, and the only effect is a mass of color. There are now over eleven hundred recorded species of Palms. I shall name only a few of those best adapted for house decoration.

Latania Borbonica, a Fan Palm, is more largely used than any other, as it grows easily and is a plant of dignified expression. *Areca lutescens* is one of the most graceful, tall growing species,

with bright, glossy green foliage and rich golden yellow stems; it is now grown in very large quantities. *Areca Verschaffeltii* is not so often seen as the last named, but it is very distinct and showy, with dark, shining green foliage with a dark band through the centre of each leaf.

Kentia Canterburyana, the Umbrella Palm, in its native country attains a height of thirty-five feet, but is slow of growth under cultivation in green-houses, requiring seven or eight years to reach a height of five feet. It is valuable as a house plant on account of its tough and enduring qualities. There are several varieties, of which *K. australis* and *K. Fosteriana* are the best known. All are handsome, and capable of sustaining, without injury, as much neglect as any Palm in cultivation. *Phoenix rupicola* is a plant of exquisite grace, the finest of its genus. *Phoenix sylvestris*, the Wild Date, is of coarser growth than *P. rupicola*, but valuable for its distinct character and enduring qualities. *Raphis flabelliformis* is a plant of erect growth, having the stems covered with coarse fibre; a grand Palm for house culture, enduring either heat or cold and much neglect without injury. It is very distinct and handsome. *Raphis humilis* resembles the last, but is more delicately graced; one of the very finest Palms in cultivation.

Ptycosperma Alexandra, the Australian Feather Palm, is a quick, robust grower, inexpensive and useful. Although a native of the tropics, it will grow well in a temperature as low as 50°. *Seaforthia elegans* somewhat resembles this species; it is tall and graceful. Plants ten feet high and upwards are most effective, as they do not show to the best advantage when smaller. *Cocos Weddelliana* is the most elegant of the smaller Palms, with finely divided foliage, recurved with exquisite grace. Small plants are unexcelled for dinner table decoration. *Geonoma gracilis* is very similar to *C. Weddelliana*, with somewhat coarser foliage, but of the same graceful habit. It should not be grown in the house for more than a few days, as it requires an atmosphere more moist than can be given it outside of the hot-house. *Prichardia grandis* is dwarf and of slow growth, a native of the South Sea Islands, with leaves about two feet long and three feet broad. It is rare and beautiful. *Maximilliana regia* is not very plentiful yet, but is destined to grow in favor, being quite distinct and striking in appearance. It is of easy culture and one of the hardiest and thriftest Palms under neglect. *Oreodoxia regia*, the Royal Palm, is a native of the West Indies and tropical America and a prime favorite. Tall, slender and stately, it is most effective when used in a group of lower growing species.

All the above, except *Phoenix rupicola*, *Seaforthia elegans*, *Cocos Weddelliana*, *Geonoma gracilis*, *Prichardia grandis* and *Oreodoxia regia* may be successfully grown in the house all winter if the following rules are observed: Pot them firmly in soil composed of equal parts of loam, sand and fibrous peat, with a small proportion (say, one-twentieth part of the whole mass) of charcoal. Use pots as small as possible; nothing injures Palms more than over-potting. Drain well and water freely as often as the soil gets dry. Palms are often injured by insufficient watering. The surface may be kept wet while the lower roots suffer from drought. The leaves should be thoroughly sponged with water of the temperature of 60° or 70° twice a week, and to keep away insects the water, every two or three weeks, should contain Fir tree oil in the proportion of half a gill to two quarts of water. This is, without doubt, the best insecticide at present known for keeping Palms clean and healthy.

Robt. Craig.

Philadelphia.

"In the park I make it a point to use only native or thoroughly acclimated trees and shrubs, and avoid entirely all foreign decorative plants. For nature beautified must still preserve the character of the country and climate in which the park is situated, so that its beauty may seem to have grown spontaneously, and without betraying the pains which have been spent upon it. We have growing wild in Germany an abundance of blooming shrubs, which can be used in a variety of ways, but if we find a Damask Rose or a Chinese Lilac, or a group of such things, planted in the midst of wildness, the result is a painful feeling of incongruity; unless, indeed, they be set apart and fenced off, as for instance in a hedged garden near a cottage."—Pukler-Muskau, 1834.

"The simple and uncombined landscape—if wrought out with due attention to the ideal beauty of the features it includes—will always be most beautiful in its appeal to the heart."

John Ruskin.

A View in Central Park.

THE view on this page is taken from a point in the Ramble in the Central Park of this city, looking southward, and including a portion of the Terrace. Of course, it is much more than a picture of the Terrace, but it clearly shows how much this bit of architecture adds to the composition. The distant horizon line of trees has an attractiveness of its own. Nearer by are the upper Terrace lines contrasting with the masses of foliage above them. Below these are the open arches with deeper shadows, then the lower lines of the Terrace, the lake shore and the passage of water separating more distinctly the extreme distance from the middle distance. All these, with the lines of the shrubbery about the little lawn, mark the successive planes of the composition and help to bring out the gradations of light and shadow. In the Park the observer would enjoy in addition the ever varying tints of the sky which would also be reflected in the water, while he could look up to and into the leafy framework in the foreground forever without exhausting its interest. The illustration is a good ex-

Plant Notes.

Lilium Parryi, and its Habitat.—This fine Lily appears to have won its way in the ten years of its garden career to a high rank among cultivated species. The pure lemon yellow of its flowers, an unusual shade among Lilies, and their peculiar form, as well as their fragrance, combine to make it a unique species. Its range is from the springy banks and swampy cañons of the San Bernardino Mountains of southern California, where Dr. Parry discovered it in 1876 southward towards Lower California, eastward to the higher mountains of southern Arizona and thence southward, I am confident, along the western slopes of the Sierra Madre of Sonora. In these arid regions it is only by mountain brooks and springs that it can find the water its roots require, and shelter from scalding sunshine. So its habitat is the narrow sandy or peaty alluviums of these brooks, or their mossy margins, or even the ledges, over which they glide, where its bulbs are scarcely hidden from view amidst tufts of moss. Seeing it always in such wet situations I gained the impression



A View in Central Park.

ample of what can be accomplished by framing in a distant object with foliage, so as to make a complete and consistent picture, and there is no reason why such planting as it shows should be confined to public parks. Many a lawn could be made the foreground of a picture quite as attractive, and it could be graded and planted so as to emphasize the interest and increase the pictorial effect of some important object, natural or artificial, and trees could be disposed about it so as to concentrate the attention which would otherwise be distracted by surrounding objects.

“One beautiful way in which flowers can be used, especially those distinguished for the brightness and clearness of their coloring or for their tall stalks, is to plant them in moss and among wild vegetation along the edge of a brook or some other piece of water. The reflections in the water and the play of their movements thus doubled clothes with a new charm this scene which is altogether natural.”—Hirschfeld's “*Theorie der Gartenkunst*,” Leipzig, 1777.

that it would need wet soil. But northern brooks would be too cold, and with our frequent rains ordinary soil suffices for it, since I have flowered it from Dr. Parry's seed in my garden. In its native haunts, crowded upon by other plants, especially beset by grasses and shrubs, its stature is from one to three feet and the number of its flowers one to six. In cultivation I have seen these figures nearly doubled.

A New Morning Glory, *Ipomea Pringlei*, Gray, collected in 1886 on cool, grassy hillsides near Chihuahua, and distributed among my *Planta Mexicana* of that year, was admired by Dr. Asa Gray even in dried specimens, and by him recommended for cultivation. The species is perennial from a thick root, with an annual stem, erect, diffusely branched, two or three feet high and broad, with inconspicuous leaves and flowers of the largest for the genus, three inches broad, purplish blue, with a metallic lustre, and in their throat lighter blue or nearly white. The plant is common over the hills and high plains between Chihuahua and the Sierra Madre. As seen by the traveler in those lone regions, profusely covered with bloom throughout the morning, it is a bright and pleasing object.

C. G. Pringle.

Some Hardy Wild Flowers.—One cold day in February I went to see how my plants of that tough little Orchid, *Goodyera pubescens*, were standing the weather, and found the leaves protruding from a crust of snow and ice, as fresh as in June. One can hardly understand how such a velvety, delicate looking plant can be so hardy. Although it grows in thick shade, this Rattlesnake Plantain will thrive in a sunny window of a warm winter room. Such a one I knew, and when the fire went out one bitter night it was smiling freshly in the morning, although every other plant in the collection had perished. Why has such a pretty thing as *Erigeron bellidifolium* been neglected by cultivators? I accidentally discovered that it improves under domestication. A bunch of it was left by chance in a field, where it was hoed and fertilized in the same way as

perhaps, where Michaux makes record of it in his journal of that trying December visit to these mountains. I can hardly hope much from the pretty little *Galax aphylla*, known here as Colt's-foot, and carpeting the woods in every direction. It seems to resent all artificial nurture and apparently dies of homesickness when transplanted from its wild surroundings.

Macon Co., N. C.

F. E. Boynton.

Phajus tuberculosus.—This exquisite and rare Orchid is now in flower at Kenwood, probably for the first time in America. It is undoubtedly the most beautiful of the whole genus. It was introduced from Madagascar in 1881, and a few plants flowered in England, but for a long time I have heard nothing of it. Our plants were bought in 1882, and were gradually dwindling away

until a year ago, when we thought of trying them in the hottest corner of the Phalænopsis house near the expansion tank, where the temperature in winter is never below 70°. We kept them very wet, and syringed overhead at least twice a day. Under this treatment the plants have done wonders, making larger bulbs than those imported, and the strong healthy foliage shows no speck of ravages from insects, hitherto the greatest enemy of this plant. The choice of potting material seems to be a minor consideration, as one of the plants in bloom is potted in peat, while another is on a block of wood covered with sphagnum and stands upright in a pot surfaced with moss; in both cases the rooting is all that can be desired. The habit of the plant is somewhat climbing, producing a slender rhizome, much thickened at the end to form a bulb, from the tip and sides of which proceed plicate leaves about a foot long. The flower spikes are upright, 6 to 8 inches long, bearing 3 to 6 snow-white flowers, the greatest attraction of which lies in the indescribably beautiful lip.

Kenwood, N. Y.

F. Goldring.



Fig. 6.—*Aquilegia longissima*.

the farm crop. It grew luxuriantly and blossomed profusely. I think it quite as beautiful as any of our Asters, which it somewhat resembles. It has the advantage, too, of blossoming in early spring, while most of the Asters are late bloomers. Another wild plant which is not afraid of cultivation is *Houstonia purpurea*. While not as attractive as its little sister, *H. serpyllifolia*, or, perhaps, as your more northern Bluets (*H. cœrulea*) it is a striking plant, erect, branching and often more than a foot high, blossoming freely, and found naturally in high and dry soil. Our Mountain Harebell, too (*Campanula divaricata*) makes a neat addition to our list of hardy perennials. I think I may add *Shortia* to the list, although it has not been thoroughly tested in cultivation. I have little doubt, however, that it will succeed, and it can now be had in abundance, after hiding away so successfully for a hundred years, for it has been found growing by the acre on the very spot,

a curious appearance. The unripe fruit is eaten boiled as a vegetable. This plant has given rise to many varieties, differing quite largely.

E. Lewis Sturtevant.

Aquilegia longissima.*

OF the long-spurred Columbines which are peculiar to the central mountain ranges of this continent the species here figured, fig. 6, page 31, is the most remarkable. The *Aquilegia cœrulea*, with blue and white flowers, and the yellow-flowered *A. chrysantha* of the Rocky Mountains and other interior ranges, are now well-known in gardens, both in their

**A. LONGISSIMA*, Gray in herb.; Watson, *Proc. Am. Acad.* xvii. 317. Tall, somewhat pubescent with silky hairs; leaves green above, glaucous beneath; sepals lanceolate, broadly spreading, an inch long or more, the spatulate petals a little shorter; spur with a narrow orifice, four inches long or more.



Fig. 7.—A Weeping Beech.

native forms and in the hybrids which are readily obtained from them. *A. longissima* is a still more southern species, found in the mountains bordering the Rio Grande in western Texas and those of the north-eastern provinces of Mexico. It is, indeed, probably the most southern species of the genus, inasmuch as the Guatemala habitat ascribed to *A. Skinneri* is very doubtful. *A. Skinneri* was cultivated in European gardens to some extent about forty years ago and was believed to have originated from seeds collected in Guatemala by Mr. G. U. Skinner. It has, however, been recently discovered at home in the mountains of Chihuahua, both by Dr. Edward Palmer and by Mr. C. G. Pringle, and the probabilities are that the seeds were sent from there, instead of from Guatemala, by Mr. John Potts who had charge of the Mint at Chihuahua in 1842. It is known that he and his brother made collections in that region and sent plants to England at about that time.

A. longissima is distinguished from the allied species not only by the greater length of the spur, but by its more contracted orifice and by the narrower petals. The flower opens upward, spreading widely, and is pale yellow or straw color, or sometimes nearly white or tinged with red. The plant has been raised from seed in the Cambridge Botanic Garden. It proves to be more tender than our common species, as was to be expected, but there should be no difficulty in cultivating it throughout the Southern States.

In view of the recognized adaptation of flowers and insects to each other for mutual benefit, it is an interesting question what long-tongued moths have developed side by side with this long-spurred flower, and how far the plant is really dependent upon such insects for fertilization. S. W.

A Weeping Beech.

The so-called weeping trees, or trees with distinctly pendulous branches, are not of the first importance in general landscape work. Their peculiarities of form are so striking that when planted with other trees they invite attention to themselves, instead of helping to increase the effectiveness of the group. A Weeping Willow on a wood border is the first thing to arrest the eye, and it seems to break the masses of foliage and belittle their effect instead of giving continuity and strength to their outlines. As individual specimens, however, these trees may become objects of great beauty and attractiveness. The Weeping Beech, a variety of the European Beech, is distinguished among them by an eccentric vigor which is seen in the sturdy upward and outward growth of some of the larger branches, a vigor which is in marked contrast with the pensile habit of the smaller branches. These trees vary greatly in form; some being tall and slender, others low and broad, and others still, assuming the most picturesque shapes. The tree in the illustration stands in the grounds of Mr. Samuel C. Jackson, in Flushing, Long Island, and in what was originally a part of the old Parsons nursery. It is forty-four years old, and its vigor is proved by its healthful appearance as well as by the dimensions it has already attained. It is about sixty feet high and the circumference of the circle where the hanging branches meet the ground is 180 feet. The trunk is 6 feet in circumference three feet from the ground, and a man standing by it is perfectly concealed from those without the circle by the thick curtain of foliage that hangs about him on every side.

Cultural Notes.

Chrysanthemums.—Those who would have good Chrysanthemums next fall must now pay attention to their stock. No puny plants will ever give good flowers, neither will plants which have been excessively propagated. Strong cuttings put in now and grown along without becoming pot-bound or starved, will make nearly as fine plants and flowers as those propagated earlier. Plants now in small pots should be removed into pots two sizes larger and subjected to fire-heat only sufficient to keep out the frost. Use at all times soil that will permit water to pass freely through it. All newly-potted plants, from the cutting benches, should be carefully shaded from the sun for a few days, until new root action is established. If it is the intention to grow very large flowers the plants should be topped as soon as they reach the height of from 6 to 8 inches, selecting the three strongest shoots to form the base of supply. If specimen plants are required, four shoots at least should be allowed to grow and each one should be tied down to a position nearly horizontal. These same shoots will require stopping again as soon as they have 6 to 8 leaves formed. If the soil is rich no additional fertilizer will be required until the summer is advanced. Purchasers would do well to obtain plants that have been grown cold and are not pot-bound. Plants should be shipped by express.

John Thorpe.

Asparagus plumosus.—Propagated by division, this plant is of less value to florists than Smilax. But propagated from cuttings, it makes bushy plants from six to twelve inches high, which are hardly equalled in beauty or usefulness for decoration. *A. plumosus* grown in this way is superior to *A. tenuissimus*, which resembles it very much, but is too thick. *A. plumosus nanus* must be propagated by seed, which is not easily obtainable. While every side shoot of *A. tenuissimus*, cut with a bit of the main shoot, will root easily, *A. plumosus* refuses to do so. It makes roots only when a bud starts into growth in soil or sand, and this is the whole secret. A young shoot first grows nearly to its full length before the side-shoots are developed, and those on the top develop first. Therefore, cut the whole shoot as soon as the upper side shoots and all those which have started about the same time with them have reached their full development—which is indicated by the darker green color—and lay the whole shoots about half an inch deep in sand in the propagating house, taking care not to bury any side shoots. After six or eight weeks most of the dormant eyes will grow and form one plant each. Let them stand undisturbed until three or four little shoots have made their appearance, when they should be potted in very sandy soil. When these plants are about six inches high they are excellent material for further propagation, and a large stock can easily be obtained in a short time, each shoot yielding from one to five young plants. *A. plumosus* and *A. plumosus nanus* are prettiest when young and before they change into their climbing habit. But the dwarf species seems to produce all its side shoots at the same time, the lower part of the stem remaining bare even with quite old plants. I succeeded once by cutting the end of a shoot away and laying the whole shoot in sand without separating it from the old plant, but the result was not entirely successful.

C. Briner.

Chamæcyparissus obtusa is one of the most beautiful and graceful of the Japanese Conifers. We have some old plants that had fallen into a dilapidated condition, and some years ago we cut them in hard and planted them by the side of a well enriched border in dry sandy land. They have recovered splendidly and now are vigorous, bushy specimens. Others in a similar condition were also cut in and removed to a well-sheltered spot in a thinly-planted piece of woodland, and where the ground is moist and good. The result has been fully as satisfactory as in the previous case.

Magnolias.—We had a group of choice Magnolias, including *M. Thurberi* and *M. stellata*, in dry sandy land, and where the subsoil was deep sand, but they appeared to be very unhappy. The surface soil in the bed was good enough; indeed, it was good hazel loam introduced for their benefit. A few years ago we removed the Magnolias, some to our nursery ground, where the land is deep, dark and moderately moist, and some to a sheltered place on the lawn, and in which the soil is excellent. In both cases their recovery is very marked. We also have large isolated specimens of the Yulan Magnolia, some in poor, some in good soil, and in vigor of plant and profusion of bloom the balance is greatly in favor of those growing in the good soil.

W. F.

Covering Bulbs.—If Crocuses, Snowdrops, Winter Aconites, Siberian Squills and other early flowering bulbs planted last fall were covered over with a mulching of tree leaves or rank litter in order to protect them from frost, they are now trying to thrust their whitened leaves and flowers up through the covering. If we remove the mulching we expose the weakened shoots to the piercing winds and in this way render worse what before was had enough. These bulbs need no winter mulching, neither do Tulips, Hyacinths, Crown Imperials nor the host of other early flowering bulbous plants we set out in our gardens, except it may be a mulching of rotted leaves or rotted manure, which is meant to remain on the ground permanently, and is applied more with the view of preventing the bulbs from being heaved out of the earth by frost than as a protection against frost. It is when these plants are appearing above ground that they need protection most, but the ordinary way of treating them, is to strip them just at this time.

Streptosolen Jamesonii.

THIS is one of the best and most easily cultivated winter-blooming green-house plants we have. It is a native of South America, and was introduced to cultivation some forty years ago but soon disappeared from our gardens and was not seen again till a few years ago, when it was reintroduced. It is now quite generally distributed.

It is a small-leaved, evergreen, slender shrub, or rather shrubby vine, of vigorous growth. Its flowers are orange or flame-colored, and disposed in drooping, terminal, cymose panicles; every branch is tipped with a bunch of flowers. Its flowering period is from January to April, according to conditions under which it is grown, but usually it is in its finest condition in February. A few scattering flowers may be produced all summer long, but never a full crop nor handsome panicles.

It ripens seed freely, but the best way of propagating it is from cuttings of the young wood; these cuttings strike as readily as do those of Heliotropes or other soft-wooded plants, and if struck in spring and grown on in summer make fine blooming plants 4 to 6 feet high by the next winter. I raise a fresh lot of plants in this way every year, and keep over some of the old plants till they are two or three years old, but not more, as they grow too big for our green-houses.

I grow them in pots during the summer months, and plunge them out-of-doors. Were they planted out the plants would grow so rank and root so much that they could not be lifted safely in autumn. They are gross feeders. In potting them I use good loam, with about one-fourth part in bulk of rotted manure, and after the plants are brought in-doors I mulch them with rich farm-yard manure.

We winter our plants in the Carnation-house, where they are grouped together in a mass. The right temperature is about 50°. They get and enjoy full sunlight.

Although gorgeous plants for conservatory decoration, the cut flowers must be used in masses to be effective. In warm rooms they do not last very well.

W. F.

[This fine plant, a native of New Grenada, was figured in the *Botanical Magazine*, t. 4605, many years ago as *Browallia*, a genus from which it chiefly differs in habit of growth. It is also figured by Miers, the founder of the genus *Streptosolen* (*Illustrations*, t. 55).—ED.]

Mulching Shrubbery Beds.

AS soon as the snow is all gone and the weather is not frosty we go into the woods, rake up and cart home a large quantity of tree leaves for mulching shrubbery, and more especially our Azalea bed. The leaves are then beginning to soften and decay, and if at all moist, we can pack at least twice as many into a load as we could in fall. Why was this not done last fall? For two reasons: Hardy trees and shrubs have no need whatever of any mulching over winter, and it may be so much work lost, but this is not all; for in the second place, it may be the cause of much mischief by affording a lodgment for field mice, which are the most destructive rodents we have to contend with. They are especially destructive to coniferous and rosaceous trees and shrubs by gnawing away the bark around the stem at the ground level; in this way they have killed many of our Pines and Spruces. But I have never known them to attack evergreen Rhododendrons, even where these shrubs have been heavily mulched with dry leaves over winter.

The earlier we mulch our Azaleas now, the better. If de-

layed much longer the flower buds will become so prominent that the least rub against them will break them off. Put on the leaves six or eight inches deep all over the bed, and scatter a little fern, sea thatch, sedge or salt hay over the leaves to keep them from being blown about. Although this may seem to be a heavy mulching, it is none too much, and by next October it will rot down and not be an inch deep.

Summer mulching is far more important than winter mulching. By it we are enabled to grow with fair success shallow-rooting plants and many evergreens that without it could hardly survive our hot, dry weather. Mulch heavily if at all, for this is the only way to accomplish the desired result.

We use leaves only on large beds, and where we can sprinkle a little thatch over them; for small beds and individual specimens we use rough manure or thatch or salt hay alone. But in mulching trees and shrubs judgment must be used. There is no use in describing a circle 6 or 10 feet wide around the trunk of a big tree, removing the sod therefrom and mulching the ground, because the feeding roots have gone beyond that circle, and hence are not under the influence of the mulching. The way to reach them is to top-dress the ground in fall with manure and rake it off level in spring. Some writers argue that if we keep the surface of the ground well stirred by means of the hoe or cultivator in summer this answers every purpose and is better than mulching. That is well enough so far as nursery stock is concerned, but in permanent plantings, for instance in the case of isolated trees and shrubs, and shrubby beds, loosening the surface of the ground should be avoided and mulching adopted.

I have no patience with the people who call out about the unsightliness of mulching. Mulching is repugnant only to the uneducated eye. The person who understands and appreciates the benefit to the plants to be derived from this care regards its presence with special favor. But, of course, it must be neatly applied and kept.

The mulching of trees and shrubs in summer is more extensively practiced in this garden, than, so far as I know, in any other in the country, and we are, year after year, becoming more alive to its beneficial effects. *William Falconer.*

Glen Cove, N. Y.

Grapes for Home Use.

IN response to the inquiry of your correspondent in Northern New Jersey as to the best half-dozen varieties of grapes to plant for family use to the extent of about twenty vines, I name the following and add some reasons why I recommend them.

Moore's Early—two vines—the earliest good black Grape we have. The berries are large; vines hardy, healthy, and productive. The Cottage would prove its best substitute.

Lady—two vines—the earliest good white Grape; very sweet and generally liked. The vine is hardy and healthy, but not as vigorous as many others. The berries are of good size; clusters small, and its season short because of its liability to crack on approaching maturity; but I name it because an early grape of this color is desirable.

Worden—four vines—the best early black Grape; the clusters and berries are large, and the vine is vigorous, healthy, hardy and productive. The above are all of Concord parentage, and like it tender-skinned, cracking easily when ripe.

Brighton—four vines—the best early red grape we have, all things considered. The clusters are large and handsome, berries medium, vine vigorous and productive.

Delaware—two vines—among Grapes what the Seckel and Dana's Hovey are among pears. The small clusters of small red berries ripen early. The vine though healthy and hardy is not a strong grower and does not always find a congenial soil. It is worthy of special care till it gets established and its quality atones for its lack of size.

Wilder—four vines—a large, late black Grape of excellent quality. The clusters are large and handsome; vine vigorous and productive.

Niagara—two vines—the largest and finest white Grape yet tested. Berries and clusters are large and handsome; quality fully as good as that of the Concord—Mr. Downing said better and the vine is very vigorous and productive.

Empire State—two vines—a white grape of excellent quality, better in this respect than the Niagara, but not so large or attractive in cluster or berry. The vine is fairly vigorous and productive.

This list is of course for a special locality, but most of the vines named flourish over a wide area. Brighton, Wilder and Niagara have a little foreign blood in their veins, and are therefore more liable to mildew and rot

than the others which are pure natives, but in seasons favorable to the development of the rot fungus all are susceptible to its attack unless it be Delaware. From the above list your inquirer should be able to choose six kinds, if he wishes to confine himself to that number, but he can plant them all with little risk of failure. They all thrive with me on lower ground and nearer the seaboard, and therefore in a less favorable locality. I do not name the Concord because the season is covered effectually without it. Moore's Early is equally good and two to three weeks earlier, and this is followed by Worden, which is better than either. The season of the Concord is with Wilder and Niagara. *E. Williams.*

Montclair, N. J.

The Forest.

The Hardwood Forests of the South.

THE time seems rapidly approaching when the lower Southern States will furnish the greater part of the lumber shipped from the Atlantic forest region to foreign and home markets, and will take the lead in the various industries which depend for their material upon the products of the forests. From sixty to seventy-five per cent of the area of the several States of the lower South are covered with forests which have been but little encroached upon by the axe. Well timbered countries without the Tropics have at all times been foremost in progressive and varied agriculture and industries. The history of the Old and New World gives ample support to this statement.

With the exhaustion of the forests of White Pine and the denudation of the country north of the Ohio, from the Atlantic border to the Mississippi, where stood a wealth of timber once deemed inexhaustible by men still living, the lumber interests of the country east of the Mississippi are steadily gravitating southwards, and manufacturing enterprises connected with them are seeking the same field. In some investigations made for the Census office in 1880 the writer found the lumbering operations of the great coast Pine belt confined almost solely to the larger streams and to a strip two or three miles on either side of a few railroad lines traversing the forests. A few tram-roads and canals were bringing lumber from remoter parts. But now tram-roads equipped with steam power are penetrating the depths of this forest belt in every direction with astonishing rapidity and are stripping hundreds of square miles of their merchantable timber, and thousands of acres of primeval timber lands are made available by new railroad lines intersecting the forests and helping the transport of their products to the seaboard and the inland markets of the Middle States. The stroke of the axe is now heard from the basin of one river to that of the other where but a short while ago the forest solitude remained unbroken. The shipment of timber and naval stores from the Pine forests of the lower South have doubled in the last seven years, and industrial enterprises based on timber resources have increased many fold in almost every one of the Southern States. Factories of carriages and wagons, agricultural implements, furniture, cooperage and hollow ware, and large establishments for building railroad cars have sprung up with the increase of towns and cities in the mineral districts. The development of the mines of coal and iron has occasioned a great increase of the consumption of timber and fuel. The causes which within a life-time have depleted the timber wealth of many of the Northern States are, at this moment, at work in the South with an activity outstripping that of any former period.

South-western Kentucky, western Tennessee, western North and South Carolina, Arkansas, and the northern half of the Gulf States to the Brazos River, must at present be considered as the great depositories of the timber wealth of the hardwood forest. It is from these Southern forests that the constantly increasing needs of the country are to be met. Experience has proved that timber of southern growth is not surpassed in its essential qualities by that of higher latitudes. In their fullest dimensions and their greatest variety, the most valuable hardwood trees are found in the alluvial bottomlands of the larger rivers toward their lower courses, in the valleys of a higher level, beyond the light silicious soils of the tertiary formation, in the woods covering the lower flanks of bordering elevations and in the narrower defiles of the mountains. The most extensive body of hardwood forests exists in the delta of the Mississippi and Yazoo Rivers in the State of Mississippi, covering four millions of acres, of which one-fifth are in cultivation, and in the alluvial land of the Mississippi and St. Francis Rivers in Arkansas, extending over two millions of acres with scarcely ten per cent of cleared land. The individual trees

here attain dimensions rarely reached by the same species elsewhere, and in wealth of valuable timber trees these forests are not excelled.

Amongst the trees of the highest value and greatest abundance the Swamp Chestnut or Basket Oak (*Quercus Michauxii*) takes the first place. Often a dozen trees measuring two and one half feet in diameter and furnishing clear cuts from forty to fifty feet in length have been counted on a single acre. In quality the wood of this tree is in no way inferior to white oak, and is especially fit for all purposes to which the latter is applied, affording immense resources to the industries depending upon this Oak for their chief material. The Sweet Gum (*Liquidambar styracifolia*) is as frequent here and at its greatest perfection. It is only under these lower latitudes that the timber of this tree attains the qualities which give it economic importance. The wood, of a pleasing reddish brown tint, easily worked, of a fine grain and capable of a high polish, has lately begun to attract the attention of manufacturers of furniture and of the joiner for the interior finish of the best dwellings. Millions upon millions of feet of these valuable timbers are found in these forests, enough to supply the largest demand for many years. Of somewhat less value, the Spanish Oak (*Quercus falcata*), the Willow Oak (*Q. phellos*), the Swamp White Oak (*Q. lyrata*), are to be named, the latter hardly inferior in quality to white oak. To these the Swamp Maple, Water Elm (*Ulmus elata*), Honey Locust, Cottonwood, Pecan, Sassafras and Persimmon, are to be added, the two last reaching dimensions that entitle them to rank among useful timber trees. Most of the hardwood trees peculiar to the lower South, such as Magnolia, Red Bay (*Persea Caroliniensis*), White Bay (*Magnolia glauca*), Sourwood (*Oxydendron arboreum*), and others of lower rank in size, finding at present but little appreciation, will, with better knowledge of their quality, add a variety of useful material for miners' purposes, for the mechanical arts and for decorative joinery.

Difficult of access and remote from active industries, these hardwood forests, still but slightly encroached upon, may be regarded as the chief source of supply for the country's needs for many years to come. Their disappearance is, however, a matter of comparatively short time. Covering lands of greatest fertility, adapted to the cultivation of the chief staple products of this region, their reclamation for agricultural purposes, when protected against the overflowing waters of the Mississippi, is inevitable. The negro population, resisting the malarious influences of lowland clearings, and tempted by good wages and an abundance of food, will be drawn to them to furnish the labor. The movement has already set in during the last few years, and must increase as the colored man comes in competition with the labor of the increasing white population which is taking possession of the healthy upland districts.

With the growing demand for agricultural land following the slow but swelling influence of immigration, the hardwood forests of the valleys of the higher water-level and their terraces and the flanks of the bordering region are equally doomed. Though of less extent as resources of our hardwoods, these forests are of great importance, harboring a still greater variety than the alluvial forests. Preferring the warm and light soil in these districts, the Tulip tree, the White Oak, the White Ash, the Black Cherry, the Black Walnut, are found, in addition to the trees growing in the damp bottom lands, and to these could be added many others of smaller size and less value, as the Beech, Basswood, Butternut, Mulberry, Red Elm, Ironwood, Dogwood and Cucumber tree. The impending denudation of these valleys and of the elevations about them involves the greatest danger consequent upon the destruction of the forests by altering climatic conditions and affecting injuriously the stages of the rivers throughout the different seasons of the year.

The hardwood forests of the more or less broken uplands in connection with farms have in great measure lost the character of the high forest. Deprived of their larger timber, opened to the tramping and browsing of cattle and the visitations of fire, the remainder of the tree-growth presents an unpromising appearance, and in many localities, the second growth is supplanted by Coniferous trees. Immense damage has been done by clearing the steeper and more broken lands and the ranges of hills. Deprived of its productive crust, the bare subsoil of these hill lands, torn into deep ravines, presents a repulsive sight suggestive of barrenness and neglect. Raging torrents after every rain rush unchecked down the declivities, eating deeply into them, carrying the soil down the valleys, obstructing the beds of the rivers and their estuaries.

The timber growth of these upland forests consists of many species of Oaks, as the Black Oak (*Quercus tinctoria*), Post Oak (*Q. obtusiloba*), Spanish Oak, Red Oak, flourishing in a dry, light soil, the Tanbark Oak (*Q. prinoides*), Chinquapin Oak (*Q.*

prinoides), and Scarlet Oak (*Q. coccinea*), found principally on the rocky regions of the mountains. The Mockernut, Pignut and Bitternut Hickories, with the Chestnut and Tulip trees of inferior size, make up a large part of the tree growth. On the table-lands of the coal measures in Alabama, forests of this nature almost in their primeval condition extended over seven thousand square miles. These forests, fifteen years ago scarcely invaded by the small clearings, have, since the beginning of the new industrial era, become of great importance owing to the wealth of coal and iron buried beneath them, furnishing the required supplies of timber and fuel. These forest lands are now much in demand by immigrants, who, by perseverance and industry, make the soil, once considered too poor for cultivation, bring forth profitable field and orchard crops which find a ready market in the growing centres of mining industry which have lately sprung up as by magic in this region. If they are not protected against the destructive influences bearing upon them with increasing intensity as the settlement and development of the country progress, and if the needed care is not extended to the younger growth, the deterioration of these immense forests is destined to proceed surely and steadily to the same destruction to which the forests of the more densely populated districts are doomed. *Karl Mohr.*

Acacia decurrens.—Considerable attention is now being given in France to this Australian tree as a possible source of a supply of tanning material. It thrives everywhere on the shores of the Mediterranean Basin and flourishes in the most arid soils. Mons. Levallois, in a report recently presented to the National Agricultural Society of France, states that a sample of the bark grown at Antibes yielded 31 per cent. of tannin, while recent experiments show that a given amount of the bark was sufficient to cure two-thirds of its weight of leather, while a given quantity of Oak bark would cure but one-fifth of its weight of leather. If further experiments, made on a large scale, confirm the value of the bark, *Acacia decurrens* will prove a valuable tree for southern California and our dry south-western region, where good tanning material is scarce. Indeed the only tree of our Pacific forests which produces really good tan bark is *Quercus densiflora*, of northern California, now becoming rare from excessive cutting.

Recent Publications.

Manuel de l'Acclimateur ou Choix de Plantes Recommandées pour l'Agriculture, l'Industrie et la Médecine, par Charles Naudin. Paris, 1887; pp. 565.

This is a French translation, much enlarged and improved, of Baron Von Müller's well known "Select Extra-Tropical Plants," and is published under the auspices of the National Acclimatization Society of France. By far the larger portion of the work is devoted to a descriptive catalogue of extra-tropical, warm-country plants, valuable to man either from an economic or ornamental point of view, and, therefore, worthy of his attention. This is prefaced by a most interesting study of the general subject of the naturalization and the acclimatization of plants. This last the author describes as "the introduction and successful cultivation of plants valuable to man;" naturalization being the spontaneous spread of foreign plants in a country. As a general rule it is only weeds which become naturalized, but two exceptions are given; the Orange which has reverted to the wild types in Florida, and the Mango which now forms a considerable part of the forest growth in the Island of Jamaica. With these might have been included the so-called Japanese Clover (*Lespedeza striata*, Hook. & Arn.), a valuable forage plant now widely naturalized in some parts of the South, and the common Barberry, now as much at home in eastern New England as in any part of Europe.

A few errors and a few omissions will be detected in the catalogue of plants, but these could hardly have been avoided, although in a second edition it is to be hoped that more of the interesting plants of our south-western boundary may find a place, such as the lovely *Chilopsis* and *Cordia Boissieri*, one of the most showy flowering of North American trees, and considered by the Mexicans of great medicinal value. And in such a work, too, the different species of *Acacia* and *Parkinsonia*, the *Olneya* and the *Fouquieria* of Texas and Arizona, cannot be properly omitted.

The *Manuel de l'Acclimateur* is one of the most important contributions to recent horticultural literature, and its value is all the greater from the fact that the author has cultivated many of the plants he describes, especially the Eucalyptus (a genus to which he has devoted many years of study), in the

gardens of the Villa Thuret in southern France, where he has brought together the richest collection of dry-country plants which now exists. It will be specially serviceable to horticulturists in our Gulf States and in California, where there is still so much to be done in the way of introducing valuable plants.

A Manual of Orchidaceous Plants Cultivated under Glass in Great Britain, prepared and published by James Veitch & Sons of the Royal Exotic Nurseries, London.

Two parts of this work, copiously illustrated, have now appeared. They give good promise of an important and valuable contribution to the already voluminous literature of Orchids, especially in their "cultural notes", which no one can so well supply as can the Veitches out of the long experience of three generations of successful Orchid growers. Part I. is devoted to *Odontoglossum*; Part II. to *Cattleya* and *Laelia*, with *Laeliopsis*, *Tetramicra*, *Schomburgkia* and *Saphronitis*. Capital colored maps show the geographical distribution of these genera. The fact that the two parts are paged separately and that the figures are not numbered, will make it difficult to refer to this book in other publications.

Handbuch der Coniferen Benennung, by L. Beissner, Inspector of the Botanic Garden of Bonn, Ludwig Möller, Erfurt.

This is a list of all Conifers, hardy or half-hardy, in Germany, and is the result of the conference of a Congress of German horticulturists which met at Dresden last summer under the Presidency of the Baron St. Paul, for the purpose of settling the proper nomenclature of cultivated Conifers. This could not have been a very easy task, but the Congress and its Secretary have prepared a catalogue which, with its full synonymy, its very complete lists of named cultivated forms and its full index, will be found a serviceable aid to the students and cultivators of Conifers. It may be noted that *Thuiopsis* and *Chamaecyparis* are retained as genera and not merged with *Thuja*, and that with less reason *Biota* is also separated from that genus. *Wellingtonia* is retained as a genus for *Sequoia gigantea*. We should hardly have expected to have found *Wellingtonia* turning up again at this late day outside of Great Britain, where horticultural patriotism, or whatever it may be, insists on ignoring the older *Sequoia* for our "Big tree" in spite of all the efforts of botanists. *Taxus Florida*, *Juniperus Californica* (except as a synonym of another species), *Pinus Cubensis*, *P. glabra*, *P. clausa* and *P. Chihuahuana*, of the United States Flora, do not appear in the catalogue.

Recent Plant Portraits.

Azalea Indica, Leon Pynaert, *Revue de l'Horticulture Belge*, February.

Oxybaphus Californica (*Mirabilis Californica*, Gray), *Garten Flora*, t. 1266.

Orontium aquaticum, *Revue Horticole*, February 16th.

Platycaria strobilacea, *Revue Horticole*, February 16th.

Phalænopsis, F. L. Ames, *Gardener's Chronicle*, February 18th.

Oxera pulchella, *Gardener's Chronicle*, February 18th; a semi-scandent shrub from New Caledonia, producing immense clusters of pure white flowers. It is closely allied to *Clerodendron*.

Biota (Thuja) Sieboldi, *Gardener's Chronicle*, February 18th. "A form of the common Chinese Arbor-vitæ, in which the young form of leaf is preserved to adult age, the ordinary form of leaf not being produced, and the whole plant forming a compact barrel or flamed-shaped bush of great symmetry and beauty.

Public Works.

Enlargement of the Park of Atlanta, Georgia.—From the Report of the Park Commission of Atlanta it appears that an effort is being made to enlarge the principal Park of that city by securing some fifty acres of land north of its present boundary. The Park now contains but one hundred acres and is manifestly too small for the growing city. An interesting feature of the report is a classified list of the indigenous plants of the Park, prepared by Mr. A. Sidney Rauschenberg.

A Park for Lisbon.—The first prize of 12,000 francs, offered by the City Council of Lisbon for the best plan for a City Park, has just been awarded to Mons. P. Lasseau of Paris. A second and a third prize of 7,500 and 5,000 francs respectively have been given in the same competition to Mons. G. Duchesne and Mons. Eugène Deny, also of Paris.

Flower Market.

NEW YORK, *March 9th, 1888.*

The supply of cut flowers is heavy, but the general stock is poor. Prices continue to decline with all flowers excepting Orchids. *Cypripedium* are in more request than other Orchids, because they combine handsomely with green arrangements, Mignonette being much used for this purpose. *Cypripedium Laurencianum* costs from 75 cts. to \$1.00 a flower; *Cattleya speciosissima* and *C. superba* bring from 50 to 75 cts. a flower. *C. Citrina* and *C. Percevaliana* cost the same. *C. Triana* sells for 75 cts. and \$1.00 a flower, and *Lycaste Skimmeri* brings 40, 50 and 75 cts. a flower. Vandas range from 25 to 35 cts. a flower, with from 4 to 10 blossoms on a spray. *Odontoglossum crispum* costs from 20 to 35 cts. a flower, and there are from 5 to 20 on a spray. *Asparagus plumosus* brings from \$1.00 to \$1.50 a string, and *A. tenuissimus* 75 cts. to \$1.00 a string of 3 and 4 feet in length. Ferns cost from 10 to 50 cts. a frond, *Adiantum Farleyense* being the most expensive. Short stemmed hybrid Roses are selling for \$2.00 a dozen. Only selected Baroness Rothschild and Mabel Morrisons are held at \$1.00 each. Other excellent hybrids bring 75 cts. The best Jacqueminot roses are sold for \$3.00 a dozen and La France for \$2.00 and \$3.00 a dozen. Puritans cost 50 cts. and American Beauties 75 cts. each. Papa Gontiers run very poor; those selected are sold for \$1.00 and \$1.50 a dozen, and the ordinary ones are thrown in with Bon Silenes and disposed of for 75 cts. a dozen. Perles, Niphotos and Souvenirs d'un Ami bring \$1.50 a dozen, and Catherine Mermets \$2.00. Bennetts cost the same. Dutch Hyacinths sell for 15 and 25 cts. a truss; Roman Hyacinths, Lily-of-the-valley, Tulips and Narcissus for 75 cts. a dozen. Specially fine specimens of Tulips and Narcissus Trumpet Major bring \$1.00 a dozen. Lilac costs from 25 to 50 cts. a spray. Heliotrope is 50 cts. a dozen sprays. Pansies are 25 cts. a dozen, and Violets \$1.50 a hundred. Acacia costs from 50 cts. to \$1.00 a spray. Mignonette from 50 cts. to \$1.00 a dozen spikes, and Carnations 50 cts. a dozen for all varieties. *Lilium Harrisii* brings 35 cts. a bloom or \$4.00 a dozen. Callas cost \$3.00 a dozen. Plants of *Spiræa Japonica* appear, but no cut bloom is sold as yet.

PHILADELPHIA, *March 9th.*

Delicate tinted and sweet scented flowers are most in demand just now. There have been some elaborate dinner table decorations, where the very choicest flowers have been used during the past week. Orchids and the rarest Roses only are used on these occasions. Boxes of fragrant flowers are frequently sent to friends at this season—more so than at any other. A few morning weddings have taken place during Lent,—a somewhat unusual occurrence for this city. White flowers were used almost exclusively. On one occasion the corsage bouquets were made of Puritan Roses, as was the centre piece, which was a plateau four feet long. Freesias, Roman Hyacinths, and Lilies-of-the-Valley were also abundantly used. Some large and choice Amaryllises are sold at \$1 each. Single and double Daffodils are called for in about equal quantities. The double Von Sion makes the most show, but the single varieties are selected by connoisseurs. *Lilium Harrisii*, or as it is called generally the Bermuda Lily, has been in good demand at 50 cts. each. The chaste and delicate Cyclamens, both as plants and flowers, are popular, and seem destined in the near future to take a prominent place in the floral world. Pink Tulips are more used than any other shade. More Lilacs would be used if they could be had, but they are scarce. Plants in bloom, such as Azaleas, and what are known as Spring flowers, sell readily. A limited quantity of white Moss Roses are obtainable at \$1 per spray carrying one half-developed bud and several others which have not yet shown color. A few Gloxinias are offered for sale, but they are not in very great demand because they are so easily broken or soiled.

BOSTON, *March 9th.*

The windows of the flower stores are marvels of beauty just now. The display of Roses is especially fine, for at no time of the year are they offered in greater variety or perfection. The various popular hybrid Roses are seen in large quantities, Jacqueminots of course leading, with the beautiful satiny pink Madame Gabriel Luizets closely following, fully as effective in color and almost as popular. Gloire de Paris and Magna Charta are also abundant, but the chief value of these two varieties lies in their easy-forcing qualities, which make it possible to obtain them much earlier in the season than other hybrids. The later kinds are more desirable when they do come. The new Puritan is offered in limited quantities, and when the blooms come perfect, this white Rose is a valuable addition to the list of large flowering varieties. An occasional specimen of that shy beauty, Her Majesty, is to be seen. The color is exquisite, and the flower is of enormous size, but alas! it is odorless. Maréchal Niels are becoming scarce again and the only yellow Rose to be had in any quantity is Perle des Jardins. This and Catherine Mermet hold their price quite steadily, while La France and American Beauty have a downward tendency. Catherine Mermets and Jacqueminots sell at \$2.50 to \$3.00 per doz. Hybrids bring from \$3.00 to \$5.00 per doz., according to variety and quality. Other Roses are worth from \$1.00 to \$2.00 per dozen. Lilies-of-the-Valley and Tulips sell for \$1.00 per doz. Daffodils are held at the same price, but they are getting scarce and cannot always be obtained. Violets and Pansies are worth 50 cts. per bunch. Long Stemmed Carnations, Mignonette, Forget-me-not and Heliotrope bring 50 cts. per dozen. Callas are not as plentiful as they were a week ago and are in demand at \$3.00 per dozen.

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Needs of American Pomology.

1. Statistics should be gathered to determine the relative profitableness of fruit-growing in different localities. It is now demonstrated that most parts of the country are adapted to fruit-growing of some kind. For home use and local markets, the cultivation of fruits of all kinds should be encouraged over as wide an area as possible. But there are some fruits whose productiveness varies greatly in different sections, and nothing is gained to the country or the individual by encouraging their cultivation on a large scale in unfavorable situations.

To obtain more definite information than we now have regarding the best situations for the various fruits, statistics of the yield in different parts of the country for a series of years are needed. These statistics might be thrown in graphic form upon a map, showing at a glance the areas over which a given fruit, say the peach, yields a fair crop every year, other areas in which there has been a good crop on an average once in three or five years, and still others in which the trees rarely reach a bearing age. Something of this kind could be done by horticultural societies. Let statistics be taken at a few typical points, such as at South Haven, in Michigan, representing the "fruit belt," and Jackson or Ann Arbor, representing the interior of the State. Similar points for comparison might be chosen in Pennsylvania, Delaware and other States. Information so collected would help to show to what extent the fruits are grown in the locations to which they are best adapted.

2. It is time for an advance in the matter of classifying varieties. The labors of Warder and the Downings need to be enlarged and extended. A reliable manual for the identification of fruits is greatly needed. Some promising systematic work on the cultural varieties of fruits and vegetables has been done, but before satisfactory progress can be made in this direction there must be good herbarium collections of such plants. Cultural varieties are almost unknown in the herbariums of botanists, but collections of

such varieties are a necessity for their proper study. The distinctions between cultural varieties are so much less than those between the natural species and varieties, that for their proper study, it will more often be necessary to refer to the living plants; but the varieties which require to be studied together cannot always be obtained at one time in the living state, nor can they be maintained in the growing condition at the proper stage long enough for that purpose.

3. The systematic improvement of fruits needs more attention. The more promising methods of obtaining better varieties are:

(a.) Selecting the best from among the varieties accidentally produced. In this way nearly all our varieties in cultivation have been obtained. A sharp eye, quick judgment and a taste for trying new sorts are what is needed for this purpose.

(b.) Planting seeds of the best known varieties. Most of these are of short standing; many are of the nature of sports; but the tendency of like to produce like exists to some degree in all of them and renders it probable that the best varieties of the future will come from the best of those we have.

(c.) Better cultivation and changes of soil and climate. Favorable conditions are an important factor in the production of improved varieties. The finest fruits, as a rule, have arisen in the localities best adapted to their growth. Unfavorable conditions may, however, be useful for testing varieties before they are brought into general cultivation, and a long continued breeding up in a given locality may be necessary in order to produce varieties able to withstand extreme conditions, as of cold or drought.

(d.) The improvement of our wild fruits. These, by reason of the long period of their development in the country, are likely to be best adapted to its climate. Our cultivated raspberries and blackberries indicate what may be done in a short time with native species.

(e.) The importation of promising foreign fruits. Most of our cultivated plants are importations. This is not because our native resources of this kind are meagre, but mainly because there has been a longer time abroad in which to develop improved varieties. Further importation of foreign fruits is especially needed, of kinds not native to this country, and from regions having similar climatic conditions.

The Proposed Speed-road in Central Park.

CERTAIN gentlemen of this city who own fast horses have been aiming for years to get possession of a portion of Central Park and convert it into a road, broad, straight and level, whereon their trotters may be speeded, without any annoyance from vulgar animals or their drivers. Some attempts at public meetings have been made in order to invest the project with the dignity of a popular movement; but these have all proved melancholy failures. Nevertheless a bill has been prepared, and is now before the proper legislative committee in Albany, to authorize the construction of such a road, one hundred feet wide, and to compel the people to pay for the work of desolating their pleasure ground. The gentlemen who have tried to organize these meetings for the spoliation of the Park and who are throwing the weight of their influence in favor of this bill are described as "opulent citizens." It does not follow that a citizen is public-spirited because he is opulent, but, as a matter of fact, some of the abettors of this scheme have a certain civic pride and can generally be counted on for the unselfish support of any measure looking towards the city's welfare. It would not be surprising that a man whose loftiest ambition is to be known as the owner and driver of the fleetest trotting horse in the world should be willing to turn the grassy stretches of the Park into a bladeless desert to furnish a track for the exercise and display of this noble animal. The pity of it is that one intelligent and fair-minded man can be found who does not understand that the condemnation of any portion

of the Park to such a use would mean its utter ruin; or who, if he does comprehend this, entertains the belief that the plain people who would be permitted to sit on a bench by the road-side and see him drive by, would, in this way, drink in a delight which would more than counterbalance any loss or pain, caused by a destruction of the pastoral beauty of the Park.

Now, the only reason which justifies the setting apart of so large an area for a park in the heart of a city like New York is, that on ground less spacious, it would be impossible to secure any broad, reposeful examples of rural scenery. As it is, the limits of Central Park are all too scanty. The triumph of its designers' skill lies in the fact that a narrow strip of land, broken and folded into ridges of rock, has been turned into a series of tree-bordered meadows, each one giving glimpses of what promise to be still fairer and more quiet fields beyond. It is this pastoral scenery, and its restful, healing influence upon the minds of those who are worn and wearied with the strained and artificial conditions of city life, which gives the Park its value. This is the fundamental purpose of the Park; and the roads and paths and bridges are only of value as they help the visitor to obtain the refreshment offered by its quiet prospects.

The gentlemen who are able to possess fast horses, do not stand in need of this refreshment as much as some of their less favored fellows. Their winters are passed in the sunshine of the South and their summers in villas at Lenox or cottages by the sea. But to the poor and the children of the poor the Park offers the only glimpse of greensward that greets their eyes from one year's end to the other. It seems a cruelty to destroy these pictures of peace that a wise forethought has prepared for them simply to enable a few "opulent citizens" to enjoy their chosen pastime for a few weeks in the Spring and Autumn. And this is especially true, because the Park and its scenery add nothing to the enjoyment of these horsemen, who find in the driving itself its own exceeding great reward. Some of these gentlemen have famous picture galleries, and all right-minded persons would sympathize with their horror and distress if some vandal hand should cut out a strip from the border of one of their favorite landscapes. But the living picture is just as truly a work of art as the painted one, and the cutting away of this broad stretch of verdure and substituting for it something entirely incongruous with its motive and purpose would be an outrage quite as brutal.

It is discouraging that elementary principles like these need to be stated now after the Park itself has been for thirty years pleading its own excuse for being. But there are men who do not hesitate, when their minds are filled with the clamors of a controlling passion, to argue in favor of some encroachment upon the Park that "it was made to use and not to look at." The notion at the bottom of this is, that the only legitimate use to which land in a city can be put is to be built upon or trampled over, or in some way "improved" or occupied. Even a Park Commissioner who had a scheme to fill up one of the fairest vales of Central Park with cheap carpentry once justified his purpose by calling the spot "a piece of unimproved land." So long as it is not recognized as a principle of action that beauty may be in itself of the highest use; so long as it is not understood, that from the most practical, common sense view, the primary "use" of a pleasure ground like Central Park is "to be looked at," just so long every urban park in the country is threatened with destruction.

There is no need therefore to state here the special objections to this speed-road. There are difficulties in law to be urged by those who have the right to enter the Park and cross this track. There are enormous difficulties in the way of its construction. There are difficulties which would destroy its value as a track for fast driving even if it could be built. But these special objections might not hold against the next threat of invasion; and one encroachment will certainly be followed by another, for there are a hundred classes of people—each with a claim upon the

city's pleasure ground as valid as that of the fast drivers—and every one will feel encouraged to pre-empt a quarter section here or there for the special business or pleasure in which its members are chiefly interested.

What is needed most is intelligent opinion as to the primary uses and purposes of well-planned and planted parks. Their value as breathing spaces, as aids to purify the air, as places for exercise, is constantly and properly urged; but it is only when their higher function, their healthful influence upon the mind, is universally appreciated, that the foundation is laid for the strongest resistance against attacks upon their integrity.

Ghent Azaleas.

G HENT Azaleas, as they are generally known in horticultural literature, are a race of garden hybrids produced in the first place by crossing *Azalea Pontica* with different American species, especially *A. calendulacea*, *A. viscosa* and *A. nudiflora*, and then improved by selecting the best varieties raised from the seed of these hybrids. They are, perhaps, when in flower, the most beautiful of all our hardy shrubs. They are equally beautiful when massed in great beds or when grown singly. Their brilliant, deliciously fragrant flowers range in color from crimson and pink, through orange and yellow to almost white. No plants bloom more freely and few last longer in bloom. These Azaleas flourish in good garden soil, but like the evergreen Rhododendrons, they cannot bear lime, and the region where they can be grown in the United States therefore is not very large. Although the plants are all perfectly hardy, the blossom buds of some varieties are killed in severe winters and some grow less vigorously than others.

The following varieties, selected for a large collection, are hardy, vigorous and free blooming, their flower buds never suffering in the most severe winters: Henry Waterer, Belle Merville, Heureuse Surprise, Madame Baumann, Fama, Gloria Mundi, Astreans, Grand Monarque, Pallas, Beauté Celeste, Prince Henri de Pays Bas.

Hardly inferior in beauty to any of the varieties of this garden race is our native *Azalea calendulacea*, and one of the great sights of this continent for the lover of flowers is the slopes of the Southern Allegheny Mountains when they are blazing in June with the great flame-colored masses of this splendid plant.

But these hybrid Azaleas can, perhaps, be still further improved, or their blooming period, at least, greatly extended, by mingling with them the blood of *Azalea arborescens*, a very late-blooming, hardy species, with white, fragrant flowers, from the Carolina Mountains, and of the Californian *A. occidentalis*, another late blooming species. Their further improvement offers an inviting field of experiment.

These plants are spoken of here as Azaleas; in reality they are all Rhododendrons, for *Azalea* only differs from *Rhododendron* in its deciduous leaves, a view now accepted by botanists, but, in speaking of them from a cultural point of view, much confusion will be saved by retaining *Azalea*, the name by which they are universally known in gardens.

Landscape Gardening.—IV.

I T has been said that though the landscape gardener works with Nature's own materials and processes, he does not lack those opportunities for self-expression, which alone make art a possibility. His task is to produce beautiful compositions—beautiful pictures. Nature supplies him with his factors—always gives him vitality, light, atmosphere, beautiful colors and charming details, and often lovely or imposing forms in the configuration of the soil; and she will see to the perfect finishing of his design. But his design is the main thing and must be of his own conceiving.

It is easy to see that this is true when it is a question of formal, "architectural" design in gardening. But it is just as true when it is a question of the most "natural" landscape work. Nature seldom shows the artist a large composition which he can wish to reproduce; and if by chance she does, it is impossible for him to reproduce it. Practical difficulties hedge him narrowly in, and appropriateness—which in every art is a prime consideration—controls his efforts more imperiously than those of most other artists.

If the painter finds a natural scene which, without alteration, would please him upon canvas, he can paint it as he finds it and take his picture where he will. If Nature will not help, she will not hinder him, nor will appropriateness forbid his savage, or his arctic, or his tropical landscape to hang upon a wall in Paris or New York. But the gardener cannot reproduce such a landscape if he would, and appropriateness would forbid him if he could. He cannot even reproduce a scene nearer home, the appropriateness of which, in general effect and in details of vegetation, might be entire. His aim is never purely ideal; he can never think simply of beauty or even of appropriateness in the abstract. He may practice with abstract problems on paper, but with each piece of his actual work Nature says to him: Here in this spot I have drawn a rough outline, which it is for you to make into a picture. In many other spots I have shown you scattered beauties of a thousand kinds. It is for you to decide which of them you can bring into that picture, and for you to discover how they may be fused into a whole "which shall look as beautiful, as right, as though I had created it myself."

Thus we see that appropriateness must be the touchstone as regards not only general effects, but particular features. The memory may be stored with endless beauties that Nature has revealed—with innumerable "bits" of composition, with pregnant ideas for foregrounds, backgrounds, middle distances and "effects" of every sort, and with exhaustless materials in the way of trees and shrubs and flowers. But not one can be used without bringing the mind to bear upon the questions: Will it, theoretically, be appropriate in this part of the world? Can I, theoretically, introduce it into a creation of this special sort? And will practical, local considerations permit me to introduce it, if I find it theoretically appropriate? Indeed, the true process of landscape creation is more synthetical, more imaginative than this. The true artist will not go about with a store of ready-made features and effects in his mind and strive to fit them into the composition of the moment as best he may. He will conceive his general idea in deference to the local prescriptions of Nature; develop his general scheme as artistic fitness may seem to counsel; discover the special features and details which are needed to perfect it (considering which Nature will permit among those that he might desire); and then, half unconsciously perhaps, search for memories of natural results which may teach him how to achieve his own. In educating himself he will have tried less to remember in a definite way those particular results of Nature which he may have seen than to understand how Nature goes to work to produce beautiful results—to permeate himself with her spirit, to comprehend her aims, to learn what she means by variety in unity, by harmonious contrasts, by appropriateness of feature and detail, by beauty of line and color, by distinctness of expression—in a word, by composition. He will have tried to train his memory of general rather than his memory of particular truths, and chiefly to purify his taste and to stimulate his imagination;—for he will have known that, while in some ways he is Nature's favorite pupil, in other ways she treats him more parsimoniously than the rest. She gives him a superabundance of models by the study of which he may make himself an artist; but when as an artist he is actually at work she will never give him one which, part by part, can guide him in his effort. When we read of painters we marvel most not at the modern "realist" working inch by inch from the living form, but at

Michael Angelo on his lonely scaffold, filling his Sistine ceiling with forms as true as Nature's, and far more powerful and superb—no guides at hand but his memory of the very different forms he had studied from the life and his own creative thought. Yet something very like this is what the landscape gardener must do every time he takes a piece of work in hand. Certainly not each of his tasks is as difficult as a Sistine ceiling, but each, whether small or large, whether hard or easy, must be approached in the same way that this ceiling was approached. Is his work not, therefore, pre-eminently artistic work? Does it not give him full chance to express himself since it calls so imperatively at every step for the exercise of the imagination, and since the best memory in the world can only give him general, and not special, counsels?

M. G. Van Rensselaer.

Horticulture in Florida.

THE cold wave which swept over Florida in January, 1886, marked the beginning of a new epoch in her development. Before that time orange culture had been made to advertise the State so extensively that it had come to be regarded as the all-important industry, and thousands even of her inhabitants looked upon it as the only one that could be carried on with profit here. Therefore this killing frost was regarded as an unmitigated disaster. True, the groves within the orange belt proper were not seriously damaged, but a cloud was cast on the title of the orange to public confidence, and the result has been that for the past two years Florida has suffered partial eclipse. But there are strong indications that the obscuration will not last much longer.

The orange fever will hardly be revived and it is far from desirable that it should be. While it continued we suffered all the evils of a one-crop system. Besides, it diverted immigration from that large portion of the State where oranges cannot be grown with profit, but where people can more readily make a living by mixed agriculture. The great freeze, therefore, did some good in checking rash investment and reckless planting and turning people's attention to more substantial branches of rural industry.

Besides the orange no fruits had obtained much favor in Florida before 1886, except a few of a still less hardy nature. For a few years the Lemon had been planted largely in southern Florida and the fruit was shipped in considerable quantity. Being less perishable, it promised soon to rival the orange in public favor. The Lime succeeded finely in the same region, as did the Grape fruit, Citron and Shaddock, but they were but little grown except for ornament and home use.

In the orange belt the Guava (*Psidium pomiferum* in varieties, and to a less extent *P. Cattleianum*) had come to be regarded as a standard fruit, and deservedly so, for there is scarcely another that can be put to a greater variety of uses, or used more months in the year. In 1885 it was plentiful in the Jacksonville market, but it could hardly be shipped fresh out of the State. These with Bananas (planted mainly for ornament), Figs, improved native Plums (*Prunus angustifolia*), the Scuppernong Grape, and more rarely some inferior Peaches and Pears, the Japan Persimmon, the Loquat (*Eriobotrya*) the Mulberry, Pomegranate, and a few varieties of improved Grapes, comprised the minor fruits of the Citrus belt.

The Coconut and Pineapple, formerly confined to the southern keys, were coming into notice as fruits adapted to the latitude of Lake Okeechobee, and the latter fruit had succeeded well on the eastern coast as far north as Cape Canaveral. The Mango (*Mangifera Indica*) and Avocado Pear (*Persea gratissima*) had fruited bountifully as far north as Tampa. These and other sub-tropical fruits were planted still further north, and there was a growing disposition to put them to the severest test in a climate subject to a lower range of temperature than they could by nature endure.

Such was the situation when the memorable cold wave swept over us, driving the mercury down to a lower mark by four degrees than had been known since 1835. To make matters worse this cold wave was of twice the usual duration, which is two days. All Citrus fruits that had not been gathered, except in the southernmost counties and on the Indian River, were frozen. The Orange groves which had been the pride of Florida, were stripped of their foliage and remained bare and dreary during the remainder of the winter. Weak trees were seriously damaged, as were Lemon and Lime trees, while Guavas and the whole list of sub-tropical fruits were killed to the ground.

Native trees of sub-tropical species, such as the Black Mangrove (*Avicennia nitida*) and the Rubber Tree (*Ficus aurea*), some of them fifty years old, were killed, proving the exceptional severity of the weather. North of latitude 30° on the Atlantic side of the peninsula, and 29° on the Gulf side, neglected and unprotected Orange groves were badly damaged, while some even on the northern border of the State were scarcely injured, except by loss of foliage, which began to put out again in March.

This event, occurring at the beginning of the tourist season, and when southern California had just become accessible to tourists, proved disastrous to Florida in its immediate effects; yet looking toward the ultimate welfare of the State, it must result beneficially. The Orange has shown itself to be much harder than was supposed. Attention has been turned from sub-tropical fruits, and in seeking for substitutes many hardy fruits have been brought into notice, which will add greatly to the people's comforts and sources of income. Faith in the one-crop system has given place to desire for greater variety. The people have been led to inquire and experiment, and by this means have come to know that the orange belt, as well as the cotton belt of the State, is adapted to a great variety of profitable and attractive industries. That some progress has been made in the way of fruit-growing will be shown in another letter.

Jacksonville, Fla.

A. H. Curtiss.

A Disease of Certain Japanese Shrubs.

JAPANESE shrubs form, as every horticulturalist knows, conspicuous ornaments of modern gardens, and are in many cases to be regarded as indispensable. All that concerns them is, therefore, of interest, and details of the experience even of a single amateur may not be without interest. In my own garden at Newport, R. I., the exposure is towards the east, and the distance from the sea-beach about one-eighth of a mile. The soil is light, but fairly good, with underlying clay. The prevailing wind during the greater part of the year is from the south-west. The average winter temperature is higher than 20° F. Lower temperatures are not very frequent, but temperatures as low as 0°, or even lower, do occur, though not for more than one or two days at a time, and not more frequently than once or twice in the course of a winter. The spring is always very cold and late—a fact which was noted by Bishop Berkeley during his residence on the island in 1728-34. For a number of years I have observed that spring arrives at Cambridge, Mass., nearly a fortnight earlier than at this place. Warm days in April are very often followed by very cold nights. The cool and delightful summer is followed by a long, very cool autumn, not favorable to the perfect ripening of bulbs.

I have for some years cultivated Japanese and Chinese shrubs with an especial predilection, and have noted the following curious fact in regard to a number belonging to different natural orders: Some time in July or August the tips of the new shoots begin to look sickly, then wither, turn brown and finally die down to the root, leaving a number of other branches in a healthy condition. This I have observed in *Rosa rugosa*, *Cercis Japonica*, *Acer polymorphum* and varieties, *Exochorda grandiflora* and *Staphylea Bumalda*. I have not been able to detect the presence of any insect, and have found no remedy, except the heroic one of cutting out all affected branches. As a rule the root remains sound and sends up new shoots during the ensuing spring. *Exochorda grandiflora* has suffered most and for several successive seasons. The disease showed itself for the first time in the summer of 1886 in an old and very large group of *Rosa rugosa*, and again during the past summer in some much younger plants. *Cercis Japonica* is not hardy here, but is killed to the ground every spring. The new shoots invariably begin to die down in July. *Viburnum plicatum* is not affected, and I have not observed the disease in *Anapelsis Veitchii* or in *Cercidiphyllum Japonicum*, *Rhodotypos Kerrioides*, *Hydrangea paniculata grandiflora*, *Actinidia polygama*, *Akebia quinata* or in *Eleagnus longipes*, which last summer bore a prodigious crop of an agreeable acid fruit. I have already stated that on this island very warm days in April are often followed by very cold nights. Two years since beautiful hedges of *Lonicera Halleana* were killed, root and branch, by alternate heat and cold in April, while *Lonicera Japonica* and *Lonicera brachypoda aureo-reticulata* also suffered severely, although in a less degree. It may prove that the disease which I have observed is also due to alternations of heat and cold, and perhaps that it is analogous to the frozen sap-blight which affects the pear.

Newport, R. I.

Wolcott Gibbs.

Foreign Correspondence.

The Kew Arboretum.

THE living collection of trees and shrubs in the open air at Kew is by far the most extensive of any in Europe. It is intended in these notes to give an account of the most remarkable specimens of this famous arboretum, but it seems first of all desirable to give a sketch of its history, so that some idea can be formed of the way in which, from a small beginning, Kew has attained its present importance. About the middle of the seventeenth century Kew—and this short, familiar name I shall use to designate the Botanic Gardens and Arboretum—belonged to a gentleman named R. Bennett, whose daughter and heiress married Lord Capel, who died Lord Deputy of Ireland in 1696. Lord Capel in reality was the first to begin the formation of a botanical collection by importing rare trees and shrubs from France. It was not, however, until a long lease of Kew had been obtained from the Capel family by the Prince of Wales that much was done in altering and laying out the grounds. The mother of George III., Augusta, the Princess Dowager of Wales, some years after the death of her husband, resided at Kew, and decided to make a botanic garden. In this work, which she took great pleasure in personally superintending, she received much assistance from the Earl of Bute, a liberal patron of men of genius, both in literature and in the arts, but probably the most unpopular English minister of modern times. It may be worth mentioning here that Lord Bute's favorite study was botany, and that he published a quarto work in nine volumes, entitled "Botanical Tables," a whim which it is said cost him £10,000; only twelve copies were printed.

In 1759 William Aiton, a pupil of the celebrated Philip Miller, the friend and contemporary of Linnæus, was placed in charge of the gardens. Aiton laid out and planted as an Arboretum, according to the Linnæan system, a piece of ground about five acres in extent. Many of the finest foreign trees were contributed in 1763 from his garden at Whitton by Archibald, Duke of Argyle, surnamed by Horace Walpole, the Tree-monger. The following testimonial to the ability and character of this nobleman is given by Peter Collinson (the friend and contemporary of Linnæus), a famous old gardener, who was the first to introduce to cultivation in Britain, through his friends Bartram, Catesby, and others, a host of North American trees, shrubs and plants: "The Duke of Argyle, on the 15th of April, 1761, died as he sat in his chair, my honored friend and great patron of all planters, aged 79, a very hearty man of that age. In the year 1723-4 he took in a part of Hounslow Heath, to add to a little farm, and began planting by raising all sorts of trees and shrubs from seeds from our northern colonies and all other parts of the world; he had the largest collection in England, and happily lived to see to what a surprising maturity they had arrived in thirty-seven or thirty-eight years. Great was his benevolence, for he gave to every one to encourage planting, and raised plants on purpose to oblige the curious at this seat of his, called Whitton. He had a fine collection of rare birds and beasts; he was a great chemist, natural philosopher, mechanic, astronomer and mathematician. He was a wonderfully amiable man, plain in his dress, without pride or vain ostentation; his library was scarcely to be equaled. He was 41 years old when he began to sow seeds for his plantations." Several of the trees presented to Kew by the Duke of Argyle are still flourishing in their original positions, and a detailed account of some of them will be given by and by.

It would be a waste of time to give minute details respecting Kew and its fortunes between the periods mentioned above and 1841, although there is not the slightest intention to underrate the services of the second Aiton, nor of his able colleague, Mr. John Smith, A.L.S., who is still hale and hearty, and takes a lively interest in all matters

horticultural.* The next step of most importance was the appointment of Sir W. J. Hooker in 1841. The greater portion of what is now the Arboretum was then called the Pleasure Grounds, and was simply nothing more or less than a game preserve. The new Director lost no time in calling the attention of the government to the cramped accommodation for the hardy ligneous collections, and urged the formation of a National Arboretum. A plan was drawn out by Nesfield, one of the foremost landscape gardeners of his time, and the lines laid down by him have in a broad sense been followed. When Her Majesty relinquished the grounds in 1840 the "Board of Green Cloth" ceased to control the destinies of Kew, and it was placed under H. M. Commissioners of Woods and Forests. In 1843 permission was granted to utilize a piece of ground measuring forty-eight acres as a pinetum; of this plot the noble palm house may now be said to form the centre. A considerable number of fine Conifers still exist of those planted at that time. Not until 1850 were the Pleasure Grounds—more than 178 acres in extent—diverted from their use as a game preserve and devoted to their present purpose. For some time before the appointment of Sir W. J. Hooker, Kew had languished for want of efficient support, but ever since that event the establishment has progressed by leaps and bounds. After the death of Sir W. J. Hooker, his son, Sir J. D. Hooker, reigned in his stead, and no one in the scientific world is unaware of the services rendered to horticulture and botany by the late director. The appointment of Mr. W. T. Thistleton Dyer to his present post is a comparatively recent occurrence, but the works carried out by him sufficiently prove that the establishment will develop still further and will maintain its position at the head of the botanic gardens of the world.

Kew, February, 1888.

George Nicholson.

Floral Notes from London.

A new race of hybrid *Begonias* has been originated by the Messrs. Veitch, of Chelsea, which promises to become of considerable value for winter flowering. The foundation of this race is the new *Begonia Socotrana*, which was discovered and introduced a few years ago by Professor Balfour when exploring the little known island of Socotra in the Gulf of Aden. This species is distinct from other cultivated *Begonias*, having shield shaped or round leaves, and flowers of symmetrical outline about one and one-half inches across and of a bright rose-pink. It flowers naturally in winter, and so it occurred to the Messrs. Veitch that a good result could be obtained by intercrossing the Socotra *Begonia* with some high colored varieties of the South American species, especially with those having distinctly tuberous roots and which bloom in summer. The first attempt resulted in the production of a pretty variety showing intermediate characters between the parents. It had more rounded leaves than its parent, *B. insignis*, while its flowers, though smaller than those of *B. Socotrana*, were more highly colored. It was named Autumn Rose because it began to flower in autumn and continued nearly throughout the winter. The next cross of *B. Socotrana* was with a tuberous variety, and the pretty hybrid named John Heal resulted. It is a dwarf compact plant, producing flowers very freely, and continuing in bloom through the winter. The flowers are of a bright cherry-crimson. A third variety is named Adonis, which has much larger flowers than the preceding two, more regular in form and of a pleasing rose-pink. The most recent hybrid is called Winter Gem, a cross between *B. Socotrana* and a highly colored tuberous variety. It has large, bold leaves, almost as round as those of the Socotra *Begonia*, and large flowers of good shape of a bright rosy-crimson borne well above the foliage. Messrs. Veitch have a large number of seedlings yet to flower, and judging by the rate of advancement in the few hitherto produced, some good things may be expected.

The White Bornean Jasmine is one of the loveliest and most fragrant plants one can grow for a continuous supply of cut bloom during winter. At least, it is so here, and, no doubt, the plant would behave as well in America. It is rather a new plant, introduced by Messrs. Veitch a few years ago

* Since the above letter was written the veteran ex-curator of the Royal Botanic Gardens has passed away at the age of ninety years.—E.D.

from Borneo. It has a tendency to climb, its shoots being slender and rambling. It flowers abundantly; every twig bears a cluster of blossoms. It delights in a warm and moist house, and if in a light position will produce a continuous crop of bloom for several weeks.

The Double Chinese Primula, *Eva Fish*, is not a new variety, having been put in commerce years ago by Messrs. Henderson, but rarely, if ever, has it been seen in such perfection as at an exhibition of the Royal Horticultural Society at a late winter meeting, when it was honored with a certificate. It is distinct from all the others in point of color, which is a sort of plum-purple. The flowers are very large, perfectly double, being, in fact, like compact rosettes, and are borne in great trusses, rising well above the luxuriant foliage. There is no other double Primula of a similar color to compare with this one, and it will probably become even more popular than heretofore. Each flower of the double Primula makes a neat buttonhole bouquet and they are much used for this purpose.

Wm. Goldring.

Plant Notes.

Hardy Begonias.—Mr. Pringle's note concerning the rediscovery of *Begonia gracilis* in Northern Mexico, reminds me to ask why the old hardy *Begonia Evansiana* (*discolor*) is so much neglected. I once had a bed of these plants in northern Maryland, which occupied the same spot for eight or ten years. The bulbs were occasionally lifted and reset, as they became too thick in the bed, but had little other attention, being treated as a little group in the shade of trees in an out-of-the-way place. The plants came through a temperature of 18° below zero in 1880, without any covering. My practice was to plant early Tulips among them, in the fall, to make a bit of early color, and by the time the *Begonia* leaves appeared above ground the Tulips were ready to be lifted. In autumn the bed was a mass of rosy bloom, until frost cut the flowers down. I have never seen it planted elsewhere, and it is now hardly known except in old green-houses, where it sometimes becomes almost a weed from the dropping of the bullets from the axils of the leaves. It is far more reliable as a bedder than any *Begonia* I ever used.

Crozet, Va.

W. F. Massey.

Grevillea Thelemanniana.—This elegant little Proteaceous plant is one of the prettiest of the genus, and a native of Australia. It attains a height of three to five feet, and has slender, drooping branches, terminated by pendulous racemes of bright red flowers tipped with yellow, their beauty being enhanced by the delicate pinnate leaves. Although a scarce plant it is a comparatively easy one to grow, and will do well in company with Azaleas. It should be potted in a compost of equal parts of peat and loam with a good sprinkling of sand; care should be taken not to give it too much pot-room. During the winter months—which is the time the flowers generally appear—the plants should be kept comparatively moist at the root, but the atmosphere of the house should be dry, and a temperature from 45° to 55° maintained. The *Protiacææ* are not so popular as they should be, probably on account of the extra attention the plants require during the hot days of summer, when neglect of watering may result in their death. A good plan in summer is to plunge the pots to their level, out of doors where water is handy. This species is easily increased by cuttings of half-matured shoots inserted in sand in a cool house.

F. Goldring.

Allium Neapolitanum is the prettiest white flowering species of the genus, a native of southern Europe, barely hardy here, but well fitted for pot culture. We had it in capital bloom in February in a cool green-house. The bulbs are roundish, very small and silvery gray, the foliage is flat and moderately broad, and the flowers quite pretty, white and loosely arranged in full umbels terminating a scape some fifteen inches long. The plants set and ripen seed freely and by sowing this seed a fresh stock of the plants can be readily secured.

Ornithogalum Arabicum.—Dry bulbs of this plant potted last October and then grown along in a cool green-house are now in bloom. The flowers are large, white with black centres, showy and in flat-headed racemes terminating scapes, some eighteen to twenty-four inches long. The foliage is long, flat and slender, but I cut it into about half its length and in this way secure a tidy form. This species and *O. lacteum*, from South Africa, are the best for pot culture, and both are easily grown. W. F.

Akebia quinata.—In Philadelphia we can grow, with a little protection, many of the southern vines, such as the Carolina Jasmine, *Berchemia volubilis*, *Bignonia capreolata* and *Decumaria barbara*, a privilege denied to many but a few degrees north of us. But after all we could hardly spare the useful and pretty *Akebia quinata*. Its trifoliate leaves, though apparently so tender, when young, are sturdy enough for any weather, and the plant itself defies our most severe winters. Its rapid growth, and its early plum-colored flowers with their delicious fragrance make it altogether desirable. When planted where thick, yet not dense, shade is required, no vine is more effective. It rarely produces fruit here, yet on several occasions specimens of the fruit have been exhibited at our Horticultural Society. One of the best ways to propagate the *Akebia* is to take half-ripened wood in midsummer, cut into lengths of from one to two eyes each, and insert them in pans of sand and water.

Joseph Meehan.

bright purple. The flowers are so placed as to resemble a flying bird, and justify the popular name of "Bird of Paradise Plant."

W. A. Manda.

Wayside Beauty.

IN these days there is no lack of advice to plant trees by every roadside, and Village Improvement Societies are furnishing good examples of neatly kept highways. But many of our country roads are already bordered with trees and shrubs and climbing vines of Nature's own planting, and it is quite as important to preserve the wild beauty of this spontaneous growth as it is to provide for the more formal and stately rows of Elms and Maples which are planted on Arbor days. The illustration below gives a glimpse of a New England by-road which, fortunately, has escaped the axe and brush-hook of the enterprising path-master. Many officials in charge of our highways



A Country Road.

Strelitzia augusta.—Most gardeners are familiar with the *Strelitzia Reginae*, generally cultivated and flowered in our green-houses, but the plant named above is rarely seen and still more rarely in flower. It does not bloom until it is from fifteen to twenty-five years of age, but afterwards it keeps pushing up its curious spathes of flowers which last long in perfection. Aside from the showy flowers which are produced nearly the whole year round, its stately form and large leaves make it conspicuous. Those only can enjoy its possession, however, who have large green-houses, for the plant grows from 15 to 20 or more feet in height. Its culture is simple. It flourishes best if planted out in the green-house in a good, rich compost of loam, sand and leaf-mould, and in this way it will take an unlimited amount of water. It can be grown from seed as well as from offshoots which are produced from the base of the plant. It is related to the Banana which it resembles in appearance and structure. The stem is marked with irregular rings where the leaves have separated. The leaves are large, oblong-lanceolate and slightly arching. The stout scape branches out into three or four spathes resembling small canoes, from which the flowers are produced in succession. The three nearly equal sepals are eight inches long and pure white, while the two halbert-shaped petals are smaller and

appreciate the value of trees when planted in straight rows and at equal distances, but a group of Cockspur Thorn, or Sassafras, or Black Haw, or a thicket of Sumach, or Hazel-nut, is too often looked upon as a disfigurement and a proof that the overseer is neglecting his duty to keep the roadside neat and clean. Miles on miles of wayside beauty are sacrificed every year to this mania for "trimming up," but the trees and shrubs spring up again to clothe the desert made by man. In smooth and level regions a strip of greensward bordering the wheel-way and running under the open fences into adjoining fields is always pleasing, and it cannot be too neatly kept. But in all hilly and stony regions east of the Alleghanies, no lovelier road-border can be conceived of than the native trees and shrubs which flourish wherever they are left to themselves. Every one recalls some narrow lane or by-way, with fern-embroidered thickets on either hand, where the June Berry and Wild Plum and Witch-Hazel blossom above the Roses and Honeysuckles and Red-root; where the Wild Grape covers the nakedness of the stone walls and the Bitter-sweet swings from the branches of the trees overhead; where wild flowers can be found in bloom any day between April and November; where the brown thrush sings and the rabbit makes her home. Indeed, it would be difficult to name a spot where there is

more of natural beauty and melody and fragrance than a country roadside against which the hand of improvement has not been lifted.

Iris bracteata.*

AMONG the peculiar species of the genus *Iris* which are found upon the Pacific slope of North America, the one here figured is one of the more notable and interesting. From near the extremity of its slender rootstock it sends up a flowering stem which is covered by loose sheathing and overlapping bracts, purplish, and scarcely differing from the bracts which subtend the flowers. The flowers are usually large, either nearly pure yellow or the recurved sepals (or "falls," as they are sometimes called), veined with bluish purple. The tube of the flower is very short and funnel-shaped, and the sepals, as in all Western species, are without beard or crest. The petals are narrow and erect, and the narrow styles are much prolonged beyond the anthers. The leaves that arise from the rootstock are solitary, at first sheathed at base by several thin, equitant bracts which appear to soon dry and wither. The leaf itself is linear and taller than the stem, thick and leathery, and persistent to the second or third year. When dry, the margins become revolute as a consequence of a dissimilarity in the two surfaces. The ordinary equitant leaf of *Iris* is as if it were folded longitudinally upon itself, so that the two surfaces are identical in character. Here, while one side is smooth, close and bright green, as usual, the other is lighter colored, with a very thin cuticle crowded with stomata, making it, of course, much more hygrometric.

This species was found by Mr. Thomas Howell, of Arthur, Oregon, in 1884, in the mountains of Josephine County, very near the southern boundary of that State, flowering in the latter part of April and in May. In 1887 he again visited the locality and secured roots, from which it is hoped that the plant may be introduced into cultivation. In its characters it is most nearly allied to *I. Douglasiana*, which is common in the Coast Ranges of California from Del Norte to Alameda County. That species is much more leafy, and the usually pale lilac flowers have a much longer and narrower perianth-tube. The accompanying figure is from a drawing by Mr. C. E. Faxon. S. W.

Sweet Peas.

OUT of thirty-one named varieties of Sweet Peas, planted for trial last year, I found but nineteen really distinct kinds. Cardinal was practically identical with Invincible Scarlet; so was Princess Louise, with The Queen; Queen of the Isles, with Invincible Red Striped; Violet Queen and Grand Blue, with Light Blue and Purple; Purple Striped, with Black and White; Captain Clark and Lotty Eckford, with Blue Edged.

Princess Beatrice is one of the most beautiful, with large, clear rose-pink flowers. Miss Ethel and Isa Eckford are nearly identical with it, but somewhat inferior. Adonis is similar, but darker, a deep carmine-pink. The Queen has a standard of deep rose, tinged with purple, and darker wings—a finely-formed flower, a trifle dull in color. Vesuvius is quite distinct, with standard of rosy-crimson, lighter at the edges, spotted and veined toward the centre with darker color, and wings of rosy purple, spotted like the standard.

Of scarlets, Invincible Carmine is the best, being an improvement on Invincible Scarlet, with broad standards, the rich color deepened in the wings and heavily shading the keel. Duchess of Edinburgh is similar, but with standard of lighter color and a white keel. Scarlet Striped has a white ground shaded and striped with scarlet, while Invincible Red Striped has scarlet ground, striped and blotched with white.

No pink and white variety is as good as Painted Lady, though Crown Princess of Prussia is beautiful, but of lighter color. Captain Clark has a white standard shaded with rose and veined with dark lines, and white wings tinged with rose and edged with purple. Fairy Queen is nearly pure white, with a few delicate, crimson veins in the centre of the standard. Butterfly is white, faintly edged and shaded with blue.

Among the blues, Bronze Prince is an improvement on Indigo King, having better formed standards, the purplish crimson distinctly tinged with bronze. Violet Queen shows a



Fig. 8.—*Iris bracteata*.

**I. BRACTEATA*, Watson, *Proc. Amer. Acad.*, xx. 375. Rootstock slender; leaves solitary, rigid, much exceeding the stem (one or two feet long by half an inch broad or less), striate, one side green and the other glaucous, revolute on drying; stem angled, covered with imbricated sheathing bracts two to four inches long; bracts of the spathe approximate, thin-foliaceous, two or three inches long, two-flowered; perianth-tube short, funnel-form; sepals oblong-obovate, two or three inches long, recurved, yellow, usually veined with bluish purple; petals erect, oblongate, somewhat shorter; anthers longer than the filaments; styles long-crested; capsules exserted, ovate-oblong, an inch long.



Fig. 9.—Chinese Narcissus grown in water.

reddish violet tinge in the wings, and Imperial Blue shows more blue than others of this class. Princess of Wales and Purple Striped are the best of the dark-striped varieties, the one blue and white and the other purplish crimson and white.

The most useful of all for cut flowers is the old Pure White. Unfortunately it is a rather poor grower, and therefore the announcement last year that an improved variety of Pure White had been shown at an English exhibition was gratifying to all who take a special interest in these beautiful and fragrant flowers. Other new varieties at English exhibitions, spoken of as distinct and promising, are Primrose, Mauve Queen, Splendor and Apple Blossom, whose names give some indication of their color.

A. H. Fewkes.

"It cannot be too often repeated that care should be taken not to willfully destroy the native features of the scene. Many gardeners assume that before beginning their plantings they must dig up everything that Nature has made to grow; whereas experience proves that they would accomplish their end much sooner and better if they should try to second Nature by making slight changes here and careful additions there."

From C. C. L. Hirschfeld's *Theorie der Gartenkunst*, Leipzig, 1777.

Polyanthus Narcissus.

THE ancient Chinese custom of growing the Polyanthus Narcissus in water to bloom at the advent of their New Year was brought to San Francisco by emigrants from the Celestial Empire more than a quarter of a century ago. The fashion has now reached the east, and it is not very uncommon to see this plant growing in this way in the houses of Boston and its suburbs. The cultivation of the Narcissus in water is very simple. The bulb is placed in a shallow bowl or deep plate, about six weeks before it is wanted in flower, and, according to the Chinese habit, is surrounded with small bright-colored stones probably to prevent it from tipping in the plate; this is filled with water and should be placed in the dark until root-growth is made. When the roots appear the plant should be placed in a sunny window and will require no further care beyond a daily addition of fresh water.

The variety of Narcissus brought by the Chinese to this country and from here introduced into England, is known as the Grand Emperor. The Chinese bulbs are exceedingly vigorous. They are nearly double the size of those of other varieties of this species of Narcissus, and when grown in water sometimes throw up leaves and flower-stems three feet in height. The Chinese Narcissus is an interesting and attractive house plant. Our illustration above is from a photograph of a plant grown near Boston.

Annuals for Cut Flowers.

ANNUALS suitable for cut flowers are also the most suitable for garden decoration. They should be ready growers and free bloomers, and have bright, showy or fragrant flowers, with stiff stems, and they should last well when cut. And we should grow enough to enable us to have large clusters of a kind rather than a few blooms only of each. While Gaillardias and French Marigolds bloom all summer long, Asters and Mignonette last but a few weeks, and Poppies not many days. To have annuals, therefore, in good condition all summer long, we must make two or more sowings of many kinds. I make repeated sowings of Asters, Mignonette, Phlox, Candytuft and the like, not only to succeed themselves, but also to succeed Hollyhocks, Canterbury Bells, Veronicas and other plants that bloom before midsummer, and are then cut over. And as many of the spring-sown annuals, Zinnias and African Marigolds, for instance, become disheveled before they have quite finished blooming, I never hesitate to clear them away and replace with fresh plants. This necessitates keeping up a reserve stock, which I always do, and in this way have as fine Zinnias, Eldorado Marigolds, Scabious, Salvias and some other annuals, until frost overtakes them, in October, as in July. In order to have good flowers we must grow them in good ground.

We have a great variety of uses for cut flowers. Cannas, African Marigolds, miniature Sunflowers, large Poppies and Zinnias appear to good advantage in large bunches in roomy halls, and if cut with long leafy stems so much the better. For parlor and dining-room tables and brackets we should use the most beautiful flowers, and such as are pleasantly, but not strongly, fragrant. A mixture of many kinds of flowers together in one vase should be avoided.

In addition to the annuals that are most desirable for cut flowers we have a large assortment well fitted for garden decoration, and from which, too, we may cull many a bouquet; for instance, Sweet Alyssum, Schizanthus, Clarkia, Browallia, Mimulus, Godetia, Cornflowers and the like.

The following are all worth sowing for cut flowers:

China Asters.—Truffaut's Improved Pæonia Perfection, Victoria, Crown and Reid's Quilled are capital. By sowing in March, the end of April and the first of June we can have Asters from July till October. Crimson, rose and white are the most desirable.

Candytuft.—Rose and white are the most desirable colors. Sweet-scented, Spiral and Dwarf Hybrid White are the best summer varieties; and *Gibraltarica* is preferred for wintering over in frames.

Cannas.—If sown in March in the green-house, and planted out in May, these should bloom in September.

Single Dahlias.—These grow readily from seed and seedlings four to five months old bloom freely.

Drummond Phlox.—The *grandiflora* section is best. Sow now or in April and again early in June.

Gaillardias.—The annuals, as *G. picta*, and its double variety, *Lorenzia* and *G. amblyodon*, bloom abundantly from June till October, but with age the plants get sprawly, hence the necessity of a successional sowing in May. The perennial *G. aristata* and its *grandiflora* and *maxima* forms also bloom well as annuals.

Larkspur.—Although showy, the annuals are not good enough for cut flowers, but some of the perennial species, notably *Delphinium grandiflorum*, bright and beautiful, are very free flowering when treated as annuals.

Marigolds.—Of the English, Meteor is good in early summer and fall; and of African, the Eldorado strain is unsurpassed. Among French Marigolds the double striped are best, still many prefer the brown or mahogany color.

Mignonette.—Miles' Spiral is one of the best. Sow early and in good ground.

Nasturtiums.—These are desirable on account of their brightness and lasting qualities. Lobb's varieties are better than either the common tall or dwarf annuals.

Pansies.—The Trimardeau gives us the largest flowers. Sow in June for fall flowers, and in August for spring use.

Petunias.—Bunches of double Petunias are quite pretty, and last well. They grow freely from seed, and bloom when about three months old, but we cannot reasonably expect more than twenty-five per cent. to come double.

Poppies, especially the double sorts, last in good condition for two or three days when cut before they are fully open. Sow broadcast about the end of March or first of April.

Scarlet Salvia.—This can be treated as an annual sown in February in-doors and in May out-doors. The flowers last only for a day or two.

Scabious.—The large-flowered section and the very dark plum-purple and white varieties are best, and they bloom all summer long.

Stocks.—The large-flowered ten-week Stocks, scarlet and white, are the best, and it is better to make repeated sowings than to depend upon the Intermediate Stocks for a supply in fall.

Sweet Peas.—Sow in rich soil just as soon as the frost is out of the ground. The first sowings are always good; sometimes the successional sowings will not bloom at all.

Sunflowers.—The "New Miniature" (which is *Helianthus cucumerifolius* pure and simple) is best. The flowers are small, bright golden yellow, with dark centres, and have none of the coarse appearance peculiar to the ordinary Sunflowers seen in gardens.

Verbenas.—The Mammoth strain is best. Sow early, say in February or March, and plant out in May in rich, moist ground. Verbenas will not thrive in hot, dry, poor land.

Vincas.—The pure white variety, and the white, with red eye, are best. Sow early and plant out in late May in a warm, sunny exposure.

Zinnias.—The new one, *grandiflora plenissima*, gives the largest flowers, but the dwarf, double white, yellow and scarlet give the most satisfactory results. Never buy mixed seed, as it not only contains much poor stuff, but many "washy" colors.

Wm. Falconer.

Hepatica and Blood-root.

AMONG the flowers which vie with each other in being the first to welcome April, the Trailing Arbutus is, at the East, as early as any. Even now, however, in early March, the blue-eyed Hepatica is opening in our garden, to which we transplanted it from the woods. It always succeeds in cultivation; but to see it in its beauty one must go to the forest. No flower has a more decided personality—whether its face is seen peeping from among the dead leaves, from the base of some rock, or the brow of some mossy boulder. There are those who maintain that it has no odor. But really it exhales a faint, but exquisite, fragrance.

The Hepatica is a near relative of the Wood Anemone. Indeed botanists now call it *Anemone Hepatica*. Like its delicate cousin, it is apetalous. Below the calyx, at a greater or less distance in particular individuals, is a whorl of three ovate and soft, silky bracts. Beginners in botany mistake these, and naturally, for the calyx. The sepals are quite indefinite in number, as are the stamens and pistils. Its three-lobed, glossy green leaves add much to its charm, and their shape suggested the name of Liverwort.

Another early April flower, equally easy to transplant and to cultivate, is the pretty Blood-root (*Sanguinaria Canadensis*). It belongs to the Poppy family, and its pure white and very deciduous flowers come up enfolded by a leaf. Later on, this leaf expands to a great size, and is itself highly ornamental. One has to be up with the lark to catch its two fugacious sepals.

The Hepatica loves rocky, wooded hillsides, while the Blood-root seeks the banks of streams. Yet both will thrive under wholly different surroundings in a city garden. This leads me to say that many of our wild plants can be cultivated, and with proper care they will increase in size and beauty. Among the spring flowers we have tried are Bluets (*Houstonia carulea*), the yellow Violet (*Viola pubescens*), the wild Columbine (*Aquilegia Canadensis*), the Indian Turnip (*Arisæma tryphillum*), and the Dutchman's Breeches (*Dicentra Cucullaria*). All these, and many more, deserve a place in the flower garden.

Providence, R. I.

Wm. Whitman Bailey.

The Propagation of Magnolias.

WHEN the Magnolias are to be propagated by seed it should be separated from the pod as soon as ripe, macerated in water for a week or more, and then, after a thorough washing in clean water, it should be sown, while still moist, in pots or boxes filled with light, sandy and well-drained soil. These should be kept in a cool house until January, when they may have a temperature of 50° at night and 10° or 15° higher during the day. If the soil is kept moist, but not wet, the seed will usually germinate in five or six weeks, when the young plants can be removed to small pots or boxes. If shifted on from small pots to larger ones during the summer, and grown in a close, moist atmosphere, many of them will be established and fit to graft by autumn. If not sown in the green-house, the seed, after being cleaned, should be put in boxes with sand in alternate layers and placed in a frame or cellar where

it will not freeze, until about the first of May in this latitude, when, as soon as the ground becomes warm, it may be sown out-of-doors. If the seed is not washed clean as soon as possible after gathering, it quickly becomes rancid, and will not germinate readily; but when thoroughly cleaned and mixed with damp sand it will keep for a long time. I have sown the seed without washing, and the pulp in rotting soured the soil and a fungus appeared in it, so that the plants had to be moved into fresh soil to save them.

When the Magnolias are propagated by grafting, the stocks should be well established in pots the year before and plunged in a frame or other sheltered place and cared for during the summer. When cold weather approaches, the pots should be removed, before they freeze, to a pit or frame where they can be protected until used. They can be grafted successfully from the middle of January to the middle of March either by side or cleft-grafting under double frames—that is, under a box frame in the green-house. They prefer a slight bottom heat to start the roots into working condition. The frame should be kept close for a few days, or weeks, during bright weather, but air may be given when the house is closed and on cloudy days. A slight syringing once or twice a day in bright weather will be beneficial. It is usually from three to five weeks before grafts can be considered established, although in from seven to ten days an estimate can be made of what percentage has "taken." Magnolias can also be grafted from half ripened wood from July to September, and they can be budded during August or September. They are usually grafted on stock of *M. acuminata* and *M. Umbrella*; some preferring the latter because of its abundant fibrous roots and the ease with which it can be transplanted. I prefer, however, *M. acuminata*, because the other species suckers, and unless great care is taken these shoots will kill out the graft in the young stock.

Magnolias can also be increased by layering; in fact, until within a few years this was the favorite method of propagation, and few gardeners knew how to graft them. Layering is a simple operation, and can be performed in spring or summer. A small trench is dug a little way from the plant, and into this branches are bent down and held firmly with hooked pegs. The ends are then turned up, the young branches are tongued under an eye and the trench is filled up with good loam. In hot, dry weather, water should be given occasionally. If layered early some of them will root the first season, although many of the Magnolias will not root until the second year. As soon as rooting takes place, the branch should be separated from the old plant, pruned into shape and transplanted into good soil in the nursery.

Jamaica Plain, Mass.

Jackson Dawson.

Rules for Planting Wind-breaks.

THE influence of the wind-break is local and almost entirely mechanical. It prevents the fierce sweep of winds over the surface of the ground, and therefore tends to diminish evaporation from the soil and from plants, especially in cold weather, and to lessen the mechanical injury to trees and bush-fruits. It is apparent to all good observers, however, that wind-breaks are sometimes injurious. Therefore there must be certain rules to govern their planting. The most important of these rules, for Michigan especially, may be briefly stated:

1. *The wind-break should not obstruct atmospheric drainage.* Cold air is heavier than warm air, and it therefore settles into the lower areas. Elevated areas are consequently warmer than low ones in still weather. Inasmuch as these high lands are more wind-swept than others, it has become a common impression that the wind itself is in some manner a protection to fruit plantations, whereas the protection really comes from atmospheric drainage. The wind-break upon most of the elevated areas, therefore, should be open enough to allow of the free drainage of air. In such localities a tight wall of evergreens is apt to be positively injurious. Deciduous trees, with perhaps a sparse admixture of evergreens, make the better wind-breaks for such places. It should be borne in mind that the object is not to stop the wind, but rather to break its force, to check it. Breakwaters are often made of a network of naked spiles rather than a solid wall.

In many interior localities a dense wind-break on the north and west excites an early growth in tender fruits, thereby increasing danger from late spring frosts. Hence:

2. *The wind-break should never be dense enough to force the buds on fruit trees, in those localities which are subject to late spring frosts.* It is evident, therefore, that Spruces

and other evergreens should be planted sparingly in such places, and that deciduous trees, which do not come early into leaf, should be chosen.

One of the most disastrous effects of winds in the orchard, and especially in small fruit plantations, is the sweeping of the surface of the ground, causing excessive evaporation, carrying off the snow and thereby exposing the roots and crowns of the plants to danger. Therefore:

3. *As a rule, in localities where atmospheric drainage will not be seriously checked, the wind-break should have a comparatively dense bottom, formed by undergrowth or low-branching trees.*

All crops closely adjoining the wind-break suffer from lack of moisture and food supply, and many small plants, as bush-fruits and nursery stock, are broken by the accumulating snow. Hence:

4. *So far as practicable, the wind-break should be planted at a distance of six rods or more from the fruit plantation.*

In our severe climate only the most hardy and vigorous trees should be planted; or, in other words:

5. *Native trees and shrubs are preferable for wind-breaks.* Of exotic trees, only the Norway Spruce and Apple are desirable for wind-breaks in Michigan. L. H. Bailey.

The Forest.

The Forests of Vancouver Island.

VANCOUVER ISLAND is situated between the parallels of 48° and 51° N. lat. and between 123° and 128° W. long. It is about 240 miles in length and from 40 to 70 in breadth and contains about 14,000 square miles. With the exception of the southern part and a few settlements at Nanaimo and Comox, the whole island is still covered by heavy forest.

Through the centre of the island runs a ridge of mountainous country of varying width, which, commencing with Donald Peak at Metchosin, runs north-westerly, and, constantly increasing in altitude, culminates in Mount Arrowsmith, about 100 miles from Victoria. This mountain is 5,976 feet high, but to the north numerous peaks rise much higher, ranging from 6,000 to 8,000 feet in height. Lying between the mountain chains, or at the base of the single mountains, are numerous lakes of clear water, which are frequently united by connecting streams and discharged into the sea by rivers of no great size.

It will thus be seen that but a small portion of the surface of the island is level; indeed, it is for the most part so elevated that it must be called mountainous rather than hilly. Owing to the position of the island, in regard to the Pacific, the low grounds seem to have just as damp an atmosphere as the more elevated parts, and a wet, cloudy winter is succeeded by a cloudless, though not atmospherically dry, summer. These conditions will account for the remarkable growth of timber on the island and the appearance of certain trees north of their expected range. The forest ought, therefore, to be composed chiefly of mountain species, and this is the fact, as the hardwood trees of the low or coast districts are of little account in the general distribution.

The Oak (*Quercus Garryana*) occupies more superficial area than all the other deciduous trees together. It is abundant in all the district around Victoria, seldom growing tall and straight like the eastern Oaks, but appearing more like the trees in English parks. Usually the large trees grow singly amongst the rocks, and their gnarled trunks and wide spreading limbs appear out of place in America. North of Victoria it becomes scarce and at last ceases to grow at Comox, 140 miles to the north.

Two other trees claim particular notice. These are the Madrona (*Arbutus Menziesii*) and the Flowering Dogwood (*Cornus Nuttallii*). The former, with its large laurel-like evergreen leaves and reddish bark, would claim attention anywhere, but to find it a stately forest tree north of the 49th parallel is a remarkable fact. On all the islands in the Gulf of Georgia, and on all the exposed points of

the east coast, it is quite common; but on the gravel which occurs between the coast and the base of the mountains, it is frequent, and even on the west coast as far north as Alberni. Nowhere on the island does the Dog Wood come to greater perfection than around Nanaimo, and here, in the middle of May, the borders of the woods are white with the broad involucre of the cymes of inconspicuous flowers. Trees forty feet high are not uncommon, with trunks from six to twelve inches in diameter.

By far the finest deciduous leaved tree on the island is the Broad Leaved Maple (*Acer macrophyllum*). In the early spring, before the leaves are fully developed, it produces racemes of light yellow flowers over six inches long, which are pendant and add much to the beauty of the tree, as they hang between the young leaves and give the whole tree a superb appearance. Later in the season the broad leaves cover up the fruit and one is almost tempted to believe that he looks upon a denizen of the tropics. Bordering ponds and lakelets, and forming thickets so dense that they are almost impenetrable, are three small trees. These are the Wild Crab (*Pirus rivularis*), Wild Cherry (*Prunus mollis*) and "Barberry" (*Rhamnus Purshiana*). The latter, named "Barberry" by the settlers, is used medicinally and is widely distributed, being found far to the north.

Poplars, Alders and Willows are of frequent occurrence, but in no place do they become so abundant as to monopolize much surface. Small groves of Balsam Poplar (*Populus trichocarpa*) are found in low spots by the mouths of rivers, and the trees attain a large size and are tall and straight, but none of the other species, except one species of Alder (*Alnus rubra*), can be considered of value.

The various species of Conifers constitute the true forests of Vancouver Island, and to these we will now turn our attention. They divide themselves almost insensibly into two groups—one of the coast or lower levels and the other of the mountains—but some species pass from the plain to the mountain, while others are restricted to the coast or to the mountain summit.

The coast species, which are never found on the mountains, are *Abies grandis* and *Picea Menziesii*, together with the Yew (*Taxus brevifolia*) and the Red Cedar (*Juniperus Virginiana*). Owing to the peculiar distribution of the last species, it has been mistaken for the more southern *Juniperus occidentalis*, but all doubt regarding it has been removed the past summer. On the shores of Cameron and Horne lakes, near the centre of the island, fine trees line the shore and overhang the water, but they are never seen in the forest. The Yew is not uncommon in many places near Victoria, but it is sparingly distributed and seldom a marked feature of the forest growths.

The Fir (*Abies grandis*) is a noble tree and is a most striking object in the river valleys near the coast on both sides of the island. In company with the Sitka Spruce it forms many beautiful groves in the low country between Nanaimo and Comox. Beyond the latter point the Spruce becomes a more characteristic feature and even rivals the stately Douglas Fir itself. Around Alberni and in the valleys of the Somas River and the lakes connected with it these trees attain very great dimensions and often tower up 200 feet, with a beautiful pyramidal head of short, light green branches.

Pinus contorta is either represented by tree forms or has a most peculiar habit. At one time it is found clinging to the rocks close to the sea, at another growing in a bog in company with *Kalmia* and *Ledum*, and at Qualicum it forms a strip of forest nearly five miles wide that intervenes between the sea and the base of the mountains. Here the soil is chiefly gravel, and the tree looks very much like its cousin of the Rocky Mountains, *Pinus Murrayana*, and certainly grows under the same conditions, except that of altitude.

Ottawa, Canada.

John Macoun.

Propagation of Conifers from Seeds in the Open Air.

UNTIL about thirty-five years ago no one had succeeded in growing Conifers from seed in America, except under glass. Consequently our American nurseries were stocked with imported seedlings of the foreign kinds and with native seedlings collected in the forests.

I had seen large quantities grown in the full sunlight in the North of England as easily as Carrots and with no shelter, and therefore began by investing \$70 in seeds of the common European kinds and in several hundredweight of seeds of the native kinds collected for me in the Green Mountains. I sowed them on four acres; they germinated finely, and were a beautiful sight. I had about a week of unalloyed pleasure, except for an hour now and then consumed in wondering where a market could be found for such a large amount of stock. This problem, however, was soon solved. A bright day, a gathering thunder-shower, a heavy rain and the sudden reappearance of the scorching sun at about 2 P. M.! I went to examine my seedlings, and found them all down flat, damped off or scorched off, except a part of those latest in starting that were just breaking ground. I immediately sent for 4,000 feet of lumber, and this, with the help of an adjoining rail fence, was soon worked up into a shelter; but at the end of the season not one seedling was left.

I should gladly have given up and made no further experiments, but I had announced that success was coming, and it was too late to retreat. So I took to the woods and studied the surroundings of the seedlings in the forests. It was plain that Nature had a decided advantage over me, as it cost her nothing for seeds, and she apparently did not raise more than one or two trees from a million of them. Finally, after the next winter was nearly over, and I had secured a large stock of seed for spring sowing, I bethought me of several hundred gunny bags that had lain for years unclaimed in a steamboat warehouse. Securing them, we sowed our seed in four-foot beds, stretched the gunny bags tightly on the frames one foot from the ground, and succeeded in raising a fair crop, as the bags let the rain through evenly.

It was soon evident that the more open the sacking was, the less the plants damped off, showing that they required more sunlight. We then built frames of lath, leaving spaces between. Experiments were made to ascertain the degree of sunlight most favorable to the seedlings, and it was found that we succeeded best when one-inch spaces were left between the laths, with the frames they rested on six inches high. We followed this lath-shading for several years, until we found it almost impossible to get the quantity of lath we needed, as at the lumber mills they were only prepared to sell a certain proportion of lath with a cargo of lumber.

Finally, over twenty years ago, we adopted our present mode of shading with posts, poles and brush. Not that we considered it cheaper or better than the lath screens, but the material can be more readily obtained. Rows of posts seven feet high are set ten feet apart and eight feet distant in the rows. Fence-boards six or eight inches wide and sixteen feet long are nailed upon these at the top. Slender poles are laid across, and on these are placed branches of trees with the leaves on them. The beds are four feet wide and are laid out so that the row of posts runs up the middle of each alternate bed. If the soil is tenacious we throw it up in ridges the previous fall. The beds are raked very fine, the seeds sown dry in spring, broadcast, and raked in—the fine seeds lightly, the larger seeds more deeply. We cannot protect the seeds from birds with the brush shade as conveniently as with lath screens, but must cover them with brush or straw, or they will be scratched out.

The seeds are sown thickly, the European Larch more thickly than the others, as the imperfect seeds cannot be separated, for they are merchantable when one-third to one-half are "blind" seeds. From the time the seedlings appear above ground until they begin their second growth, they are liable to "damp off" during murky weather, in which case the screens must be taken off; but great care must be taken to have them replaced without loss of time when the sun appears. We formerly used dry sand, sprinkled over the beds, to check the damping off, but could perceive little or no benefit from it. "Rich soil encourages damping off." The beds must be thoroughly hand-weeded during the summer. Late in autumn the beds should be covered with forest leaves, with a light covering of straw or brush to prevent their being blown off. Larches are usually thinned out of the beds at one year old; other Conifers at two years old.

Robert Douglas.

Recent Publications.

Review of Forest Administration in British India for the year 1885-86, by B. Ribbentrop, Acting Inspector-General, Indian Forest Department. Simla, 1887. *Report of the Forest Department, Madras Presidency, for the year 1885-86*, by Lt.-Col. I. Cambeld Walker. Madras, 1887.

These two Reports have only just reached us. They contain the record of the work done in the Indian forests, with its financial results, for the period which they cover. The Indian Forest Department is less than a quarter of a century old. Its organization by Dr. Brandis in the face of serious native opposition, great natural difficulties, and without, at the start, a properly trained staff of assistants, is one of the greatest administrative triumphs of recent times.

The Indian forests, previous to the establishment of the Forest Department, yielded nothing to the Government. In the years covered by these Reports the net profit derived from working them systematically was over three and one-half million dollars, the operating expenses amounting to sixty-three per cent. of the gross revenue. The net receipts of the Department have increased steadily for a number of years; and they will, it seems pretty safe to predict, continue to increase as long as it is administered in the same able manner.

The history of forest administration in India might be studied with advantage by the Secretary of the Interior and members of Congress of the United States. The forests which grow upon our national domain produce no income. The land upon which they stand is sold sometimes at a mere nominal price, and while the Government is waiting for customers the forests themselves are robbed of their best timber, burned, pastured, devastated and destroyed.

Recent Plant Portraits.

Botanical Magazine, January, *Phormium Hookeri*, t. 6973; a third species of the New Zealand Flax; discovered several years ago on the Waitangi River "growing pendulous from almost perpendicular rocks, in great abundance"; and now cultivated in southern England, where it flowers and ripens its seed very freely.

Ceratophylla triloba, t. 6974; a tall pubescent herb with the habit of a Foxglove, native of Natal and closely allied to the common cultivated Indian *Sesamum Indicum*, L.

Thunbergia affinis, t. 6975; a tall shrub, a native of Zanzibar, with handsome dark blue flowers, similar, although far more beautiful, than those of the old *T. erecta*.

Prunus Jacquemontii, t. 6976; a dwarf, compact, hardy shrub, with delicate pink flowers; common in the north-western Himalayas and extending into Tibet and Afghanistan.

Masdevallia Chestertoni, t. 6977; a rather small flowered, and horticulturally, not very attractive species of this immense genus; a native of New Grenada.

Periodical Literature.

THE *Art Amateur* for January, 1888, contains a pleasant and suggestive paper on Japanese modes of arranging cut flowers, leaves and branches. The matter is one which the Japanese only have considered from an artistic point of view, but which certainly ought to be so considered by all who profess to care for flowers or for beauty in the abstract. Therefore this article is welcome, although it gives but a hint of the great stress which the educational systems of Japan lay upon the art of floral arrangement, and explains, with the aid of illustrations, only one or two of the effects they consider desirable, and one or two of the skillful and ingenious devices in which the student is instructed.

Cassell's Family Magazine will print during the year a series of popular articles treating of the garden and the work to be done in it during each successive month. "The Garden in January" and "The Garden in February" have already appeared; and while they naturally have a greater practical value for the English than for the American reader, they are by no means devoid of interest even for the latter.

Longman's Magazine for February, 1888, contains a brightly written chapter on "Orchids," by Frederick Boyle, a man of letters by profession, but an enthusiastic, and, from his own account, a successful horticulturist in his leisure hours. It is accompanied by none of the charming illustrations which have been given with articles on the same subject in more

than one of our own popular magazines, and its purpose is not, like theirs, descriptive. Its purpose is simply to prove to those who are already well aware of the beauty of Orchids, that it is by no means so difficult a task as amateurs generally suppose, to grow many species to perfection by the aid of the simplest arrangements and with the expenditure of very little time or pains.

In *McMillan's Magazine* for January, 1888, Forestry is discussed by Mr. George Cadell, formerly connected with the Indian Forestry Department. Some time ago the House of Commons for the third time appointed a Commission to inquire "Whether by the establishment of a forest school, or otherwise, our waste lands could be made more remunerative." At the time when Mr. Cadell wrote, this Commission had reported to Parliament, but no action had yet been taken on its report. Meanwhile he discusses the condition of the Crown forests in England, briefly explains the management of those in India, refers to the great benefits which France and Switzerland have received from a judicious system of control, and points out as a subject for national mortification that both at the Cape and in Cyprus, England has been obliged to depend upon the services of foreign experts in Forestry.

Flower Market.

NEW YORK, *March 16th, 1888.*

The quality of cut flowers is much better this week than last, notwithstanding a large quantity has been held on snow-bound trains. Hybrid Roses are very handsome, but have declined somewhat, those selected of favorite sorts bringing only 60 to 75 cts. each. There was no demand for flowers during the storm of the early week, but trade has been picking up since and is brisk to-day. There is an over supply of La France Roses, the very choicest bringing but \$2.50 a dozen. The finest Puritans sell for 50 cts. Ulrich Brünner sells rapidly at 75 cts. a flower. Popular varieties of Tea Roses, such as Papa Gontier, bring \$1.00 a dozen. Selected buds of Bride or Cornelia Cook cost \$3.00 a dozen. Tulips, Lilies-of-the-Valley and Roman Hyacinths are 75 cts. a dozen. Dutch Hyacinths are in large variety and in lively demand at 15 cts. a spike; Mignonette from 50 cts. to \$1.50 a dozen spikes; Carnations from 35 cts. to 50 cts. a dozen, the latter price being for favorite kinds, such as Buttercup and Grace Wilder. Violets continue firm at \$1.00 a hundred for the average quality and \$1.50 for those of extra beauty and fragrance. Smilax costs 30 cts. a yard.

PHILADELPHIA, *March 16th.*

The severe snow storm prevented growers from shipping flowers to the city in the early part of the week. It also interfered with the demand and prices have varied little since last quotations. The most notable Rose now in market is Madame Gabriel Luizet. Finer flowers of this variety were never before seen here; they are selling from 75 cts. to \$1.50 each. Mrs. John Laing is also cut in quantity; the latter is the newer, but it can never displace Madame Luizet, excepting, perhaps, for very early work. Puritans are improving in quality, and are in fair demand; it is not a first-class Rose to ship long distances; some of the growers bring it to the city in deep boxes of moss, into which the stems are thrust; this holds them steady and upright and insures safe arrival. Heath is in fair demand at 15 cts. per spray. The kind offered is a variety of *Erica caffra alba*, and is grown near Boston. It is rarely used alone, but is added to boxes of choice flowers, or is arranged with Orchids.

BOSTON, *March 16th.*

There is little change in the cut-flower market. Hybrid Roses and Jacqueminots are if anything more abundant and of still better quality. Both yellow and white Roses are scarce and they are eagerly taken as fast as brought to the city by the growers. Tulips, Lilies-of-the-Valley, and other bulbous flowers are still plentiful. Roman Hyacinths are scarce, but in their stead there is an abundance of the Italian variety, which, although slightly pinkish in color, has the advantage of bearing a larger and stronger flower spike than does the Roman. The supply of Carnations is diminishing, and prices will undoubtedly advance considerably before Easter. A few White Lilies are seen, but they are mostly short stemmed and are of little use excepting for funeral designs. Harris's Lilies and Callas are worth \$3.00 per dozen. Most people in buying Callas now require a few of the leaves with the flowers, which add much to their appearance. Hybrid Roses of extra quality bring from \$6 to \$9 per dozen. Jacqueminots, Mermets and a fair quality of hybrids are \$3.00; Perles, Niphotos and Bon Silene, \$1 per dozen; Lilies-of-the-Valley, Tulips and Narcissus of various kinds average about \$1.00 per dozen. French Marguerites, Mignonette, Forget-me-nots, Carnations and Heliotrope sell for about 50 cts. per dozen sprays; Pansies and Violets 50 cts. per bunch. Among Orchids the most attractive now in season are the Odontoglossums. Nothing more beautiful for a bridal wreath or coronet than a spray of *O. Alexandra*. Perfect sprays are worth from \$2.00 to \$3.00 each.

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The Adirondack Forests in Danger.

THE preservation of the Adirondack forests is a matter of national importance. Their destruction will work injury far beyond the limits of the State of New York. One of the principal commercial rivers of the world depends upon these forests for its existence; their value as a health resort for people from all parts of the United States is incalculable. Their preservation, therefore, is a matter which concerns the whole country.

Never have these forests been threatened with such dangers as now menace them from every side. Railroads are being built or are about to be built into the wilderness in every direction. The promoters of the Schenectady and Ogdensburg Railroad Company propose to build a line this summer directly through the heart of the Adirondacks, to serve as a feeder for the Canadian Pacific and bring that road into direct connection with New York and Boston. The Chateaugay Railroad Company is extending its line into the forest. Last year it had reached the shores of Loon Lake; now it has been carried to Saranac Lake. Its last station is only eight miles from Lake Placid and within six miles of Paul Smith's, upon St. Regis Lake. Adirondack Lodge, one of the wildest and most picturesque spots in the whole region, is now but fifteen miles distant from the railroad. The Northern Adirondack Railroad has penetrated through the forest almost as far south as Paul Smith's. Another road runs from Carthage, in Jefferson County, into the forest region. It has recently been carried to Jayville, in St. Lawrence County, and a further extension is proposed.

The building of railroads through a forest in this country means its extermination. This is particularly true of the Adirondack forest. Its escape from extermination in the past is due to the single fact that the hard woods of which it is principally composed could not be got to market from lack of transportation. If transportation is furnished it is mere-

ly a question of time when every tree will be consumed in the saw-mill, the paper factory and the charcoal furnace. Railroads will increase, too, the number of fires in the forest and thus hasten its extermination.

There is but one way to save what now remains of the Adirondack forests. The enactment of a law which shall prohibit the location of any railroad under any circumstances upon the State lands which are widely scattered through the entire region will prevent its ruin. No other measure less sweeping in its restrictions can accomplish this. There is a Board of Forest Commissioners in this State. It is the duty of these Commissioners to devise measures for the protection of the State forests and to see that these laws are put into execution. It is their duty to enlighten the people of the State upon the condition of the State forests and the dangers which threaten them. It is their duty under the law to provide instruction for the people of New York in all matters relating to forests and forestry, and to arouse them to the importance of a full comprehension of these subjects.

Have these Commissioners performed these duties?

Have they introduced any bill looking to restraining the building of railroads through the forests?

Have they even tried to rouse the attention of the public to this matter?

Do the reports which they publish from time to time, at no small expense to the people of this State, contain any valuable or accurate information in regard to the forests or to methods of forest preservation?

The only activity displayed by the Commission, so far as the public is informed, is manifested in their attempt to secure from the present Legislature the passage of a bill authorizing them to lease to "individuals or clubs for pleasure resorts or camping purposes," portions of the public domain for periods not exceeding five years' duration. This authority should not be given to the Commission. It would open the door to corruption and would threaten the forests with new dangers. Thousands of acres of Adirondack forests have already perished at the hands of hunters and camping parties. Their carelessness in setting fires and their recklessness in barking and destroying trees, are only too well known. It will be impossible to protect the State forests if the Commissioners are allowed this privilege.

The actual condition of the Adirondack forests and the doings of the Forest Commissioners during the three years they have held office need investigation. The public cannot afford indifference in this matter. Too much is at stake. The commercial and sanatory interests involved in the protection of these forests are too great to allow them to remain the prey of designing politicians and speculators.

A few years ago the concerted action of the press of this State roused public attention to the importance of preserving the Adirondack forests and the rivers which flow from them, and made the passage of forest laws and the appointment of a Forest Commission possible. The laws were rendered inadequate, and the people were cheated by politicians and speculators, who secured the appointment of an improper Commission. The result has been disastrous, and never in the history of the State has the danger to the forests been so real and imminent as it is to-day. The public must be enlightened and aroused to active interest in the matter; and the concerted and energetic action of the press of the whole country can alone accomplish this.

Horticultural Fashions.

IN the last fifty years there have been a number of horticultural fashions of longer or shorter duration. Just now the cultivation of Orchids chiefly occupies the horticultural world. Such fashions, while they have, perhaps, an unfortunate influence upon the gardening profession, are often otherwise beneficial. This was the case with the craze for Conifers which prevailed in England forty or fifty

years ago. It had the effect of driving out of cultivation a host of deciduous trees and shrubs of which gardeners who were learning their profession at that period never acquired any knowledge; but, on the other hand, it stimulated botanical exploration and vastly increased our knowledge of one of the most important and valuable families of plants. Had it not been the fashion to plant Conifers in England, it is probable that the Floras of the Californian Sierras, of the Andes, of the mountains of Mexico and Japan, of India and the Caucasus, would not be as well known as they are to-day. Other horticultural fashions have not been as productive of good. The fashion, for example, of massing together large numbers of a few varieties of tropical or semi-tropical flowering or bright-foliaged plants, known as the "bedding-out system," has little to recommend it from the point of view of the increase of human knowledge. And certainly no horticultural invention has done so much to limit the intelligence and practical skill of gardeners. Not much better has been the extravagant fashion of filling green-houses with what are known as fine-foliaged plants—inhabitants of tropical swamps. These plants rarely have conspicuous flowers, and their only interest is found in the curious shapes and markings of their leaves. They have not the graceful habit of many Palms; they cannot bear the temperature of ordinary conservatories and living-rooms, and can only be enjoyed in the reeking atmosphere of close, damp stoves. But no plants are more easily cultivated, and it is not surprising that they are favorites with gardeners trained in the "bedding-out" school—of which the taste for them is the natural outcome—and that they have driven out a multitude of beautiful flowering plants which it taxed the best gardening skill to bring to perfection.

The fashion for cultivating Orchids is not new. A few species were introduced into English gardens in the second half of the last century, and Orchids have been cultivated in the United States during the past seventy years. The taste for them shows no sign of flagging, but, on the contrary, has steadily increased, both in this country and in Europe, during the last half-century, and has never been so strong or so general as it is to-day. In the United States especially great progress has been made in the cultivation of these plants in recent years. They now form the principal attraction at many of our flower-shows, and two or three American collections rank with the finest in the world; and while as a nation we are not yet quite as crazy about Orchids as the English, the crowds which surrounded the tables at an exhibition of Orchids recently held in this city, and the high prices which these flowers bring in our markets, pretty clearly indicate the effect of fashion in horticulture.

The Orchid fashion has certainly much more to recommend it than many fashions of a similar kind. The love for cultivating these plants has done as much as any one single agency to make known the vegetation of the tropical parts of the world; their flowers, as Darwin taught us, are among the most wonderful of all the creations of Nature in their adaptation of means to ends; and many of them possess wonderful beauty of color and form. It is a question whether the most beautiful Orchid flower ever produced can equal the beauty and grace of the Poet's Narcissus, which was a favorite garden flower centuries before the first Orchid was cultivated and which will be a favorite centuries after three-quarters of the Orchids which collectors now hold so dear will be found only in their native haunts or in ancient volumes of the *Botanical Magazine*. Yet among the mass of Orchids now cultivated because they are new, or rare, or expensive, or odd, are many of very great beauty, and these will continue to be cultivated as long as the taste for horticulture lives. And the cultivation of such Orchids will increase in this country as they become better known and as people appreciate how easily they may be grown. The belief is still general here that Orchids are difficult to cultivate and can be made to flourish only in great heat. On the contrary, few plants are more easily grown if attention is given to a few of their simple requirements, and

many of the finest varieties will thrive only in the low temperature of a cool green-house. Indeed, many Orchids will grow, as an English writer recently said of *Phalenopsis*, "with the calm complacency of the cabbage." There is, too, a fascination in cultivating these plants which increases with experience. But it must not be forgotten that any fashion, however solid the merits upon which it is founded, may easily be carried too far, and that there is great danger that this growing love of Orchids may lead to the neglect of other and equally interesting and beautiful plants. A one-sided development is as dangerous in horticulture as in other human pursuits.

Hardy Shrubs.

THE true value of hardy deciduous shrubs is not yet appreciated in this country. The climate of the Eastern and Northern States is peculiarly suited to develop, in the highest degree, the beauty of many flowering shrubs and trees. Our intensely hot summers, long, dry autumns, and cold winters ripen the flowering-wood and give results which are quite unknown in countries where the changes of temperature are less marked.

The development of American gardening has suffered greatly during the last fifty years from attempts to imitate English gardens in their composition. In our efforts to cultivate the Conifers and broad-leaved evergreens which thrive in England, we have overlooked the fact that our climate is not suited, save in exceptional instances, to bring out their beauty, and that it is a climate particularly adapted to deciduous plants. Thoughtful students of the relations between cultivated plants and climate now begin to realize that if we are ever to have in America a distinctive school of gardening, it must be based upon a comprehensive use of hardy deciduous shrubs.

These have other qualifications, in addition to their abundant flowers, to commend them to more general use. They are easily and cheaply raised. They are long-lived and increase in beauty from year to year. Their size adapts them to the small gardens which must always be more common than large ones in this country. Many deciduous shrubs and small trees also have the charm of brilliant autumnal foliage and conspicuous persistent fruits. The variety of such plants which can be made to flourish in our Eastern and Northern gardens is enormous. Few persons yet realize what a shrub-garden in Eastern America might be made. In such a garden could be gathered the shrubs of Europe and their innumerable varieties, the result of centuries of careful selection and cultivation—for European shrubs flourish here although European trees do not; and those of northern China and Japan, countries rich in plants of this description, which have already given us some of the most beautiful ornaments of our gardens—the Forsythias, Deutzias and Weigelas, the Flowering Quince, the Crabs and the finest of the Spiræas.

Such foreign shrubs—when shrubs are used at all—now beautify our gardens, and American species, although not less beautiful and better suited to our climate, are almost entirely neglected. The Flora of North America is rich in shrubs and shrub-like trees the more general cultivation of which cannot be too strongly urged. So numerous are they and so varied in character and beauty, that gardens planted with them alone—without any admixture of exotic material—might be made interesting and charming at every season of the year. What small trees excel the little known or appreciated American Thorns, beautiful alike in their spring flowers and their autumnal foliage and fruit, or the Shadbush and the Judas Tree when they enliven in early spring the borders of the leafless forest—the one with white bloom, the other with glowing pink? No tree is more striking than the Flowering Dogwood when its broad white bracts expand, or more splendid in its autumn color. And these would be followed by the Fringe Tree, by the Rattlebox with its branches covered in early

summer with myriads of drooping white bells, and by the Sour-wood with pendulous racemes of Lily-of-the-Valley-like flowers and with scarlet leaves in autumn.

And with these and many other native flowering trees, might be grouped an almost endless variety of shrubs blooming in succession from earliest spring to late summer, and brilliant with autumn tints or conspicuous fruit;—the delicate *Rhodora* which tinges our northern swamps with pink in early spring; the gorgeous orange-colored *Azalea* which flames on the slopes of many southern mountains; the deliciously fragrant *Calycanthus* and *Clethra*; a host of *Dogwoods* and *Viburnums*, beautiful in flower and fruit; *Blueberries* of many varieties, modest in flower but hardly equalled in grace of habit and richness of October hues; the *Sumachs* and the *Black Alder* which in winter enlivens northern swamps with its scarlet fruit. And in such a garden a collection of native *Roses* would not be the least attractive feature. We have here merely indicated some of the rich material within reach of American gardeners. But the subject will be elaborated in future issues of this Journal, and some of the most valuable and some of the least known American shrubs will be figured and described.

We are glad to publish the letter on landscape gardening which will be found upon another page, for the subject is one about which it is desirable to create discussion. The statement in the first paragraph, that landscape gardening as a fine art means something very different from the mere cultivation of ornamental plants and the designing of isolated minor decorative features, is undeniable. But we cannot agree with our correspondent when he thinks it needful to give the name of "landscape horticulture," or any narrowly distinctive name, to "the industrial art which shapes the ground, plants the trees, makes the walks and drives." The actual manual work of doing such things is, of course, artisans' work—work similar to that which masons and carpenters do for the architect. But to know how such things should be done seems to us an integral part of the equipment of the landscape gardener as an artist. Knowledge of this kind will not make him an artist. But he cannot be a good artist without it any more than an architect can be a good artist without a knowledge of building construction; and, on the other hand, it cannot itself be put to good service unless guided and inspired by artistic impulses, any more than a knowledge of building construction can. These two arts—landscape gardening and architecture—are like one another and unlike the other arts by reason of the fact that they can never be manifestations of the æsthetic instinct in a pure form. Practical considerations must always mingle with and largely limit and control æsthetic considerations when their works are in question. In the preliminary stages of education the acquirement of practical knowledge and the development of æsthetic feeling may seem distinct and different aims. But they should always be fostered together as far as possible; and to divorce them in theoretical expositions of the art of landscape gardening, in its practice, or even in its nomenclature, would be a grave mistake.

Nothing indicates so clearly the rapidly increasing scarcity of the more valuable woods produced by our forests as the gradual substitution for them in the markets of the country of woods which up to a short time ago were considered useless.

The wood of the Cottonwood (*Populus monilifera*) a few years ago had no commercial value whatever in the United States, and was used for fuel only on the plains, where nothing better could be obtained. Improved and stronger machinery, however, has made it possible to saw this wood into lumber in spite of its tough, difficult grain, and there is now a large demand for Cottonwood lumber throughout the West as a substitute for white pine and yellow poplar (*Liriodendron*) for light packing-cases of all

kinds, immense quantities being manufactured at St. Louis and other places. The wood is found to possess the merits of cheapness and of greater lightness than white pine, and it is absolutely free from all odor or taste, valuable qualities in a case where articles of food are to be packed. It is also used for lining refrigerator-cars, and to some extent in the manufacture of cheap furniture.

The Cottonwoods, of which there are several species in the West and South-west, all produce wood very similar in quality, and are among the largest, most common and widely distributed trees along all the rivers west of the Alleghany Mountains. They grow with great rapidity, propagate themselves freely by their light seeds, and are more easily raised from cuttings than almost any other trees. The Cottonwood thrives also in the dry climate of the western plains and prairies better than almost any other tree. There is every prospect, therefore, that our supplies of Cottonwood lumber will not soon become exhausted.

A recent issue of the *Boston Journal* contains the statement that City Forester Doogue of that town had been experimenting with a preparation invented by him for the destruction of Canker-worms, with such success as to determine him to put it to general use on the city Elms. His method is to bore a hole, about three inches deep and an inch and one-half in diameter, in the trunk of the tree, and to insert a mysterious powder, the composition of which is known only to himself. The hole is then plugged up and made perfectly tight with wax. Boring and plugging trees with nostrums is an old and futile remedy; and it seems almost incomprehensible that a man occupying so responsible a position could be guilty of such quackery. The old way of using oil-troughs to stop the ascent of Canker-worms, if systematically carried out, is effectual in destroying them; and they might easily be exterminated if communities would combine in the use of such appliances.

Landscape Gardening.—V.

THERE is still one point which must be noticed as affecting the question how much the landscape artist owes to nature, how much to himself and his fellow-men. When we speak of "natural scenes" we are apt to mean, illogically, all those which have not been modified by the conscious action of art as art. We recognize a park landscape as non-natural; but those rural landscapes in cultivated countries from which the designer of a park gets his best inspirations—these, too, are non-natural. "If in the idea of a natural state," says an old English writer, "we include ground and wood and water, no spot in this island can be said to be in a state of nature. . . . Wherever cultivation has set its foot—wherever the plow and spade have laid fallow the soil—nature is become extinct."

Extinct, of course, is too strong a word if we take it in its full significance. But it is not too strong if we understand it as referring to those things which are most important to the landscape gardener:—the compositions, the broad general pictures, of nature, have become extinct in all thickly settled countries. The effects we see may not be artistic effects—may not have resulted from a conscious effort after beauty; but they are none the less artificial effects. They do not show us what nature wants to do or can do—only what man and nature have chanced to do together. When English artists became dissatisfied with the formal, architectural gardening of the seventeenth century, they fondly imagined that they were learning from nature how to produce those effects of rural freedom, of idyllic repose, of seemingly unstudied beauty, grace and charm, which were their new desire. But, in reality, they were learning from the face of a country which for centuries had been carefully moulded, tended and put to use by man. In some of its parts, of course, the effects of man's presence were comparatively inconspicuous. But of most parts it could be said that for ages not a stream or tree or blade of grass had existed except in answer to his efforts, or, at least, in

consequence of his permission; and it was these parts and not the wilder ones which gave most assistance to the artist. An instinctive love for beauty had doubtless often tried to express itself in the neighborhood of dwellings, absent though the idea of art had been from the mind of their inhabitants; nature herself is so good an artist that even in her bondage she had worked admirably and with more suavity and gentleness than in her free estate; and the mere utilitarian treatment of the land had also accidentally given rise to happily suggestive features. Take, for example, the lawn, which is so essential a feature of almost every artistic design in landscape. It is not true to say, as often has been said, that nature never suggests a lawn. But it is true to say that she did not suggest it to those English gardeners who developed it so beautifully. They must have been inspired by the artificially formed meadow-lands and glades of the England of their time.

But all the semi-natural, semi-artificial beauty of England would not have taught them how to make beautiful parks and gardens had they not been taught as well by their own imagination. What they wanted to create were landscapes which should charm from all points of view and should bear close as well as distant examination; and, moreover, landscapes which might fitly surround the habitations of man and accommodate his very various needs and pleasures. Such landscapes we can no more expect to find in nature—even in cultivated, semi-artificial nature—than landscapes painted upon canvas. That is, while we can imagine a natural spot which would be an appropriate setting for a hunter's lodge or a hermit's cell, we can imagine none which would appropriately encircle a palace, a mansion, or even a modest home for a man with civilized habits and tastes. Every step in civilization is a step away from that wild estate which alone is really nature; and the further away we get from it, the more imagination is needed to bring the elements of existence which nature still supplies into harmony with those which man has developed. The simplest house in the most rustic situation needs, at least, that a path shall be cut to its door; and to do so much as cut a path in the most pleasing possible way needs a certain amount of imagination, of art. How much more, then, is imagination needed in such a task as the laying-out of a great estate where subordinate buildings are to be grouped around the chief one, and all are to be accommodated to the main unalterable natural features of the scene, where a hundred minor natural features are to be harmoniously disposed, where convenient courses for feet and wheels are to be provided in every direction, where gardens and orchards are to be supplied, where water is to be made at once useful and ornamental, and where every plant, whether great or small, must be beautiful at least in the sense of helping the beauty of the general effect? The stronger the desire to make so artificial an aggregate of features look as though nature might have designed it, the more intimate must be the artist's sympathy with the aims and processes of nature and the keener his eye for the special opportunities of the site; but also the stronger must be his imaginative power, the firmer his grasp of the principles and processes of his art.

M. G. van Rensselaer.

Bridge at Leathertor, England.

THIS very ancient bridge spans one of the small streams on Dartmoor, in the south-west of England. Its construction is sufficiently explained by the picture—two land-piers and one stream-pier are connected by long spanning-stones which carry parapets made up of large irregular blocks. It is hardly necessary to point out the degree to which this bridge combines picturesque beauty with durability, or to explain the fitness of such bridges for rural situations in our own country. In the immediate vicinity of a very dignified house so rude and unarchitectural a bridge would perhaps be out of place; and the same is true of those portions of an urban park where formality rules or where architectural works of importance are in view. But in the sequestered, naturally treated portions of

parks, a bridge of this sort would be entirely appropriate; and carrying a road or footway near a country home of modest character or in a village suburb it would be a most charming feature. Naturally we have no wish to suggest that this bridge need be copied either in its special form or in the size and disposition of its stones, although in both these respects it would be an excellent model. It is illustrated merely to show how very simply a stone bridge may be built, and how incomparably better in effect it is than the ugly constructions of iron or the rough assemblages of planks with which in this country we are so familiar. Weather-beaten boulders as old as those in this bridge at Leathertor, and as appropriate for bridge-building, lie by every New England stream, and it would need no high degree of skill to put them to service. But we seem to have thought the bare, straight lines of iron more beautiful than the infinite variety of form and surface and color of our moss-grown stones. It is full time we changed our minds.

After the Great Snow Storm.

I GATHERED pink and white blossoms of the Spring Beauty on the 10th of the present month, and on the 12th they were under the drifting snow of what will pass into history as the great storm of March, 1888.

The wild weather of that day gave me no little concern with regard to the old trees near my house. As a consequence, I twice faced the storm at its height and took brief notes as to the action of the wind upon them. I was curious, too, to know which species was suffering most from loss of branches or general mutilation. The snapping and crashing heard above the wind's roaring suggested universal destruction. Judging from past wind-storms, I looked for the leveling of the fourteen Pines near the house, or at least that the trunks alone would remain standing; but these unaccountably escaped all serious injury and are still the same sorry-looking irregularities they have been for the last twenty years.

It is not a little strange that the long rows of White Pines planted by Joseph Bonaparte in his park near Bordentown, N.J., more than sixty years ago, have escaped serious breakage from wind, encrusting snow and ice-encased twigs—the three causes that have, separately and combinedly, effected the uncrowning and disfiguring of the Pines at home, which are no more exposed and scarcely three miles away. Do not these trees generally require planting in clusters, so as to be self-protecting, or to be intimately associated with other trees? A lone Pine is very pretty and poetical, but hereabouts it is as uncertain as the average white man.

But to return to the forest in the storm. Of a hundred or more large trees, Oaks, Chestnuts, Birches, Gums, Liquidambar, Persimmons, Catalpas, Beeches and Sassafras, occupying some three acres of southward sloping hillside, but one, a large Chestnut, was uprooted, and this was lifted bodily from the ground and carried several feet from where it had stood. The others were twisted; branches were interlocked, and several so shaken and wormed about that the closely wrapping Poison Ivy was detached, an occurrence I should never have dreamed could have taken place. Where branches were broken, they were, as a rule, detached from the trunk of the tree as though seized at their extremities and twisted off. Although the wind remained in one direction, it evidently became a whirlwind among the tree-tops, as shown by the direction of the fall of several large limbs. One large branch of an enormous Beech was broken off, but still holds by long cables of twisted strips of bark, as though the storm had repented and tried to repair the damage by tying it on again.

Of the several species of trees I have mentioned, no two are of like toughness in the texture of their wood, and in this storm the weaker and more brittle kinds did not suffer as much as the tough old Oaks. Nor were the detached branches worm-eaten and so abnormally weak. I was confronted with contradictions whichever way I turned. Associate these with wind having a velocity of fifty-four miles an hour and air full of sand-like snow, and realize how easily one could become bewildered.

In the more exposed upland fields not a tree suffered, the big Sassafras, sixty-two feet in height, not losing even a twig. Stranger still, the scattered Beeches and White Oaks that have retained their withered leaves all winter, hold them still. In short, the home woods suffered very little, and what damage there is occurred where I least expected to find it. Where the exposure was greatest, there every tree successfully weathered one of the severest storms on record. The shrubbery, seedling Oaks and Beeches, puny Cedars and trim little Junipers were bent to the ground and remained prostrate for three or four days. The snow has now melted and all are again erect;

but when I bent some of them to-day, as flatly as did the snow and wind, they cracked and were destroyed. Was it that the gradual pressure of the snow prevented the disaster that my more sudden bending caused?

While I rejoiced at having my woodland still intact, there was one aggravating feature about it all. I anticipated a harvest of dead limbs for my andirons; but they too withstood the tempest. To-day they looked down at me with a tantalizing "no you don't" expression that robbed me of half the pleasure of seeing Black Alder laden with its crimson berries resting upon a dazzling drift of unstained snow.

Near Trenton, New Jersey.

Chas. C. Abbott.

Foreign Correspondence.

The Kew Arboretum—II.

BEFORE giving details of some of the most important collections and of the most remarkable specimens here, it may be as well to say a few words regarding the general aspect and position of the Kew establishment.

stands the Kew Observatory—we pass through the collections of Cypresses, Yews and their allies, until we reach the Pines and Firs, which are arranged at the head and along the southern side of a noble expanse of ornamental water whence the supplies for garden purposes are pumped by engines at some distance away in the wood. Just across the Thames at this point is Syon House, a place rich in historical associations. A little to the left is the Isleworth entrance, and on the left bank of the river a short distance up the stream, is the pretty village of Isleworth. Following the course of the Thames we go through a very rich collection of Oaks; behind this strip and between it and the wood is a dell in which Rhododendrons luxuriate. After the Oaks come the Elms, and the extremely numerous and very varied forms of our native species are particularly puzzling. The Oaks and Elms practically occupy a considerable tract of ground, the whole length of the river frontage of the Arboretum; here and there, however, are groups of Conifers to block out the sight of the Brentford docks on the opposite bank of the stream. Not far from here Edmund Ironsides defeated the Danes in 1016, and more than six centuries later Prince Rupert gained a victory over the Parliamentary troops.



Bridge at Leathertor, England, page 52.

The village of Kew is situated on the right bank of the Thames about six miles from Hyde Park Corner, and was a royal residence as far back as the reign of Henry VIII. The chief entrance to the Gardens (there are five public entrances altogether) is upon Kew Green, one of the most delightful of the tree-shadowed stretches of sward which form such a pleasant feature of many of the villages in the neighborhood of London. About three hundred yards in a westerly direction from the large and handsome wrought-iron gates stands the Dutch House, or, as it is now always called, Kew Palace, a homely structure of red brick, said to have been erected in the time of James I. by Sir Hugh Portman, a Dutch merchant knighted by Queen Elizabeth. Here it was that Queen Charlotte died. The palace is just outside the garden boundaries and is the property of Her Majesty Queen Victoria. Turning to the left, at a right angle, the main walk—one of the most frequented of the Kew promenades—leads towards the ornamental water in front of the great Palm House: From the Palm House there is a magnificent avenue of Deodars, terminated—at the Richmond limit of the Arboretum—by the Pagoda, one of the remaining fantastic creations of the first Queen Caroline. Leaving the Richmond entrance to the left and skirting the Old Deer Park—in which

A good proportion of the Arboretum (which covers an area of over 178 acres) is occupied by noble stretches of Oak and Beech woods, with here and there fine specimens of Spanish Chestnut, Horsechestnut and other large trees. Under these grow countless thousands of Wild Hyacinths, or, as they are commonly called in many parts of this country, Blue-bells (*Scilla nutans*). When in flower in May and June the magnificent masses of color attract large numbers of artists. Visitors, too, from central and eastern Europe, whether botanically inclined or not, are struck with the sight.

The Botanic Garden proper is about 70 acres in extent and is famous for its beautifully kept lawns, flower-beds, and single specimens and groups of miscellaneous deciduous and evergreen trees and shrubs arranged for landscape effects—not planted in botanical sequence.

The Arboretum is frequently called the Wilderness, and under this name it is mentioned in "Shandon Bells" by William Black, who makes the hero, Fitzgerald, and his artist friend, John Ross, "go splashing through the mud to Kew, to see what the wilderness part of the Gardens (a favorite haunt of theirs and but little known to the public) was like in driving rain, or in feathery snow, or in clear hard frost, when the red

berries shone among the green." The red berries mentioned by the novelist are those of the English Holly (*Ilex Aquifolium*), of which there are many very fine trees. This Holly, which is made to play so important a part in some of Dickens' tales and in English 'Christmas' literature generally, has brighter red berries and dark green very glossy leaves, and altogether, as an ornamental shrub or tree, is much more attractive than the American Holly (*Ilex opaca*).

Royal Gardens, Kew.

George Nicholson, A. L. S., Curator.

Yucca Treculiana.

THE illustration of this fine tree (Fig. 10 on opposite page), the "Spanish Bayonet" or "Spanish Dagger," of western Texas, is from a photograph of a plant grown in the city of Austin, where, as in other towns of western Texas, it is quite commonly cultivated and forms the most conspicuous garden ornament. Dr. Engelman's very complete description of this species renders it unnecessary to say anything of its botanical characters. The Spanish Bayonet becomes, under favorable conditions, a tree sometimes thirty feet in height, with a slender trunk and wide-spreading branches.* It is common through south-eastern Texas, and extends south across the plains of northern Mexico, where it is associated with *Yucca filifera*, as far south as Saltillo and Parras. It forms on the Texas coast near the mouth of the Rio Grande, just back of the sand dunes, straggling, stunted forests; and further inland low, impenetrable thickets.

Yucca Treculiana was introduced into Europe by the French traveler Trécul, whose name it commemorates. According to Naudin it is very hardy in the south of France, where it flowers freely.

C. S. S.

Cultural Notes.

Hardy Herbaceous Perennials from Seed.

FROM the time the winter Aconites, Snowdrops and Crocuses appear in earliest spring till the bold Tritomas are cut down by hard frost in November, we have among hardy herbaceous perennials an uninterrupted display of flowers. But in order to have them so that we can best enjoy them we must have masses of the finer sorts rather than a single plant of each. Individuals are lost in a landscape; there we want broad colonies of a kind. In the decoration of our gardens one Phlox or one Tulip is of no avail; we want a clump or mass of each. For cut flowers one Iris or one Coreopsis would not help us much; we must have several.

How best to increase our stock of plants and variety of kinds must therefore concern us. *Helianthus*, *Plumbago*, *Larpenite*, *Veronica*, *Phlox* and many others may be readily increased by division, but *Aquilegia*, *Delphinium* and *Pentstemon* should be multiplied by seed. True species usually come true from seed, but garden varieties should, in order to keep them true, be perpetuated by division or cuttings. The seeds of some perennials, *Fraxinella*, for instance, are slow and uncertain to germinate; those of others, the Virginian Spiderwort, for example, come up with the persistence of weeds.

In growing herbaceous plants from seed, the amateur should begin with such sorts as are easily grown, for most perennials are more difficult to raise than are annuals, and need not only care before the seeds germinate, but considerable attention after the seedlings appear. He should also limit his list to suit his garden needs. If his desire is to furnish a small rockery, then choose *Erinus alpinus*, *Erysimum rupestre*, *Dianthus alpinus* and the like; if for edgings in his garden, then grow *Armeria*, *Globularia*, *Chrysanthemum Tchihatchewii* and evergreen Candytuft; if for showy flowers, try Oriental Poppies, perennial Larkspurs and Kœmpfer's Irises.

In raising perennials from seed we can begin at any time: as soon as the seed is ripe and before winter sets in; in the greenhouse in winter or hot-bed in early spring; or in a cold-frame or out-of-doors in late spring. What perennials I raise from seed and do not sow in fall I try to sow and get off my hands before I begin to sow annuals in spring. Be careful not to sow slow-germinating seeds in warm quarters, as a hot-house or hot-bed, else the chances are that the seeds will rot; but seeds that were sown in boxes in fall and wintered in a cold frame,

may be introduced to the green-house in spring with quickening effect.

For convenience sake I treat many perennials as annuals; they germinate and grow readily, and bear a full cup of flowers and seeds the first year. Among these are *Abronia*, *Ageratum*, *Dahlia* (single-flowered), *Delphinium grandiflorum*, *Eschscholtzia Californica*, *Gaura Lindheimeri*, *Leptosyne maritima*, *Lophospermum scandens*, *Mirabilis Jalapa*, *Salvia splendens* and *S. farinosa*. Of course some of these, as *Dahlia* and *Lophospermum*, are not hardy, but, treated as annuals, it matters not whether they are hardy or tender.

If sown early many perennials will bloom freely the first year. These include *Anemone coronaria*, *Anchusa*, *Cedronella cana*, *Conoclinium*, *Delphinium*, *Echinacea*, *Gaillardia*, *Incarvillea Olga*, *Lychnis*, *Malva*, *Platycodon*, *Pyrethrum*, *Salvia pratensis*, *Sidalcea*, and *Stachys coccinea*. Now, while *Coreopsis lanceolata* if sown early in spring will bloom here towards fall, I am informed that in Vermont it will not bloom at all the first year from seed. And the same is true of many other perennials.

There are many kinds of perennials that I have never known to flower the first year from seed. These include *Aquilegia*, *Anthericum*, *Arabis alpina*, *Asclepias tuberosa*, *Astrantia*, *Baptisia*, *Betonica*, *Bocconia*, *Buthalum*, *Callirhoë*, *Chieranthus alpinus*, *Erysimum rupestre*, *Globularia*, *Lathyrus latifolius*, *Iris*, *Lilium*, *Oenothera Missouriensis*, *Orobis vernus*, *Statice latifolia*, *Tritoma* and *Veronica longifolia*.

Perennials that bloom in spring, for instance *Crocus*, *Scilla Sibirica*, *Trillium* and *Sanguinaria* (all of these self-sow themselves abundantly), seldom bloom the first year from seed; but we have an exception in the case of *Anemone coronaria*. On the other hand, perennials that bloom in fall, if sown early often bloom the same year—for instance, Hollyhocks, *Hyacinthus candicans*, and *Montbrietia crocosmiaeflora* (not quite hardy).

Many perennials, when once established, self-sow themselves abundantly. Among these are *Delphinium*, *Coreopsis*, *Gaura Lindheimeri*, *Salvia farinacea*, *Dianthus* and *Digitalis*. Of these, Foxgloves make good perennials with me in sandy land, but in clay soil I have never found them to be satisfactory other than as biennials. Sweet Williams often live over as perennial, but in all cases I have had the best success with them as biennials. And the same is true of *Lychnis grandiflora*, *L. fulgens*, *L. Senno*, and the many varieties of *L. Haageana*. While many of the commoner Pentstemons, as *P. ovatus*, *P. diffusus* and *P. pulchellus*, self-sow themselves with great freedom, the finer species, as *P. Eatoni*, *P. Palmeri* and *P. Cobæa*, have never, under my care, produced any self-sown plants. But at Woolson's, at Passaic, I have seen numbers of self-sown plants of *P. grandiflorus*. While *P. diffusus*, *P. ovatus*, and *P. levigatus* make pretty good perennials, I always have had most success with the other species when they were treated as biennials. The seed should be sown as soon as ripe.

Many perennials germinate as readily as do annuals. Among these are *Anthemis*, *Aquilegia*, *Arabis*, *Armeria*, *Chrysanthemum*, *Conoclinium*, *Delphinium*, *Dianthus*, *Digitalis*, *Eupatorium*, *Gypsophila*, *Iberis*, *Iris*, *Lobelia*, *Lychnis*, *Malva*, *Pentstemon*, *Primula*, *Sedum*, *Sempervivum*, *Thalictrum*, *Thymus*, *Tritoma*, *Viola* and many others. But all the species of these genera do not germinate with equal facility—for instance, while *Pentstemon ovatus* comes up thickly and in about nine days, *P. cobæa* never comes up a full crop nor regularly. And the freshness of the seed has a great deal to do with its germination. I have never succeeded in raising plants of *Dictamnus*, *Primula Japonica* or *P. rosea* from seed a year old. Seeds of leguminous plants, especially of *Thermopsis* and *Baptisia*, even if the seed is fresh, germinate very irregularly. I have had a fair crop come up within a month after sowing, and the balance of the seed lie in the ground for a year and then grow. While *Lilium tenuifolium* and *L. pulchellum* will come up a full crop within a fortnight from sowing time, I have found that *L. auratum* and *L. superbum* take several months before they germinate. Seeds of *Clematis graveolens* and *C. tubulosa* germinate readily in a few weeks, but the hybrids so common in our gardens take months.

All hardy perennials, except such as we treat as annuals, had better be sown in late summer or fall; in fact, as soon as the seed is ripe. By this means, in the case of seeds that ripen early and germinate readily, as *Aquilegia*, *Aubrietia*, *Alyssum saxatile*, and the like, we can have fine strong stock before winter sets in, and which will bloom nicely next year. In fact, in the case of most all, except some Lilies, Clematises, Pæonies, Hellebores, Globe Flowers, and Siberian Corydalis, which if sown as soon as ripe do not germinate till the next spring, and Gentians and Composites that bloom late, we may reasonably

**Yucca Treculiana*, Carrière, *Rev. Hort.* 1858, p. 580; 1861, p. 305; 1869, p. 406, f. 82.

Y. canaliculata, Hook, *Bot. Mag. t. 5201* (1860)—Baker, *Gard. Chronicle*, 1870, p. 828; *Jour. Linn. Soc. xviii*, p. 226.—Engelm., *Trans. St. Louis Acad.* iii., 41.—*London Garden*, xii., p. 328, t. 94.—Sargent, *Forest Trees N. America*, vol. ix., 10th Census U. S., p. 218.—Hemsley, *Bot. Anz. Cent.* iii., 371.
Y. longifolia, Engelm. in *Sched.*—Buckley, *Proc. Phil. Acad.* xiv., p. 8 (1862).



Fig. 10.—Yucca Treculiana.

expect to get strong stock to keep over in beds or cold-frames.

I make two sowings, one as soon as the seeds are ripe as stated above and another in November. This last sowing includes *Aster*, *Adonis*, *Aconitum*, *Asperula*, *Astragalus*, *Baptisia*, *Clematis*, *Dicentra*, *Epimedium*, *Euphorbia corollata*, *Gentiana*, *Gillenia*, *Heleborus*, *Hepatica*, *Lilium*, *Iris*, *Mertensia*, *Monarda*, *Orobis*, *Phlox*, *Polygonum*, *Paeonia*, *Trollius*, *Uvularia* and *Viola*. These are sown in flats (shallow boxes) filled with sandy soil, and a thin layer of moss is laid over the surface to prevent undue drying. The boxes are then placed in a cold frame, there to remain over winter. Very few of the kinds will germinate before spring, but most all will come up the following April or May, when the moss should be removed from about the seedlings, and they attended to in the way of light, ventilation, water and transplanting.

W. Falconer.

The Cultivation of Lilies.

A COLLECTION of rare Lilies is seldom seen in our gardens, and yet no other class of plants is more greatly desired or as often tried.

Experience with Lilies has convinced me that nearly every variety can be successfully grown with as little trouble as any other plant of equal merit, and that failure is in the main due to overestimating their hardiness. It is the general opinion of those having authority to speak for the Lily, that, with but few exceptions, the species are perfectly hardy. This opinion finds encouragement in the "Cultural Instructions" of nearly every catalogue, and the trustful planter who does not take the proper precaution loses his bulbs. Nearly all the species are natives either of cold or temperate climates,

and therefore it is assumed that all can endure the rigor of our winters. But the fact is that few of the species are truly hardy in this climate except those indigenous to the soil. While it is true that some of the species are found in the coldest part of the habitable globe, growing most luxuriantly, it is equally true that the same species cannot endure our winters without protection. Few climates are so trying as our own to those bulbous-rooted plants, which are usually considered hardy and left in the open border during the winter. This is particularly true of the coast climate, from Massachusetts to Virginia, where there is frequently forty degrees of frost, and not a particle of snow on the ground for protection. Here the earth is frozen to a great depth one week, and thaws out the next. These frequent changes from water to ice and back again cause the earth to contract and expand to such a degree as to tear the bulbs in pieces. I have seen large plantings destroyed in this manner.

But to be more specific. The beautiful *Lilium tenuifolium* is a native of Siberia, where it is largely cultivated as an article of food. Of course it can endure a Siberian winter, but a Long Island winter kills it. Why? Because in its original home the first indication of winter is a snow-storm which covers the ground so thickly that frost rarely, if ever, penetrates it; while here the unprotected earth is frozen far below the Lily bulbs over and over again between November and April. The same is true of the *Lilium Martagon*, the bulbs of which are much valued by the Cossacks as a vegetable. With them it is perfectly hardy; in our warmer climate it will rarely survive more than a single winter without protection, but with that precaution it grows with more vigor here than in its native home.

The White Turk's Cap Lily (*L. Martagon alba*), in the northern parts of New York, in the Eastern States and in Lower Canada thrives with all the vigor of a native plant. So common is it in one locality in St. Lawrence County, N. Y., that a friend sent the writer some flowers for name, saying it was a common wild Lily, but she could not find it described in Gray's "Botany." Here we can only grow it in a cold-frame; because it misses the blanket of snow that covers it in Germany, its native home, and in our own more northern latitudes.

In Vermont, where the ground is nearly always covered with snow during winter, all kinds of Lilies grow to the greatest perfection. We have seen finer bulbs of the *L. auratum*, *L. Brownii*, *L. chalcidonicum*, *L. Martagon*, and other species, grown in that State without the slightest artificial protection, than we have ever known produced in any other country.

There are many other plants protected by snow in a similar manner. We notice on the Alps, at an elevation that permits of but four months of spring, summer and autumn, that the wild Primrose grows in the greatest profusion and luxuriance. It is there constantly covered with snow during their long periods of freezing weather. In the valleys below, where there is no snow and but little frost, the same plant will not live through the winter unless carefully protected.

All that Lilies require for their perfect development and rapid increase is protection against frost, and this is a simple and inexpensive operation. The best and most natural covering is about six inches in depth of newly fallen leaves, kept in place by a few boughs or pieces of board. Salt or marsh hay will afford excellent protection; corn-stalks answer a good purpose; in short, whatever material is the most convenient is the best to use, if it will only protect the bulbs against a temperature that changes repeatedly from one side of the frost line to the other.

C. L. Allen.

Eriostemon intermedium.—This is a South Australian shrub with rigid branches, small, shining, dark, pungent, evergreen leaves, and white flowers tinged with pink. These are axillary and borne in profusion along the primary and secondary branches. *Eriostemon* belongs to the same family as the Orange, which it resembles in the size and shape of its flowers. This is one of those beautiful, old-fashioned hard-wood plants which should be more often seen in our collections. It is very easily cultivated and should be potted in turfy peat mixed with sand. It requires careful drainage and the protection in winter of a cool green-house. In this climate it should, in summer, be plunged out of doors, in partial shade. It flowers in March. A figure of *Eriostemon intermedium*, which is considered by Bentham in his Flora of Australia as simply a form of *E. myoporoides*, was published in the *Botanical Magazine*, t. 4439.

Boronia megastigma is another Australian shrub of the Rue family, which is too rarely seen in our collections. It is chiefly valuable for its deliciously fragrant flowers, a small spray of which will scent a whole room. *B. megastigma* is a slender, delicate shrub, sometimes two feet high, with erect branches and spreading opposite branchlets. The flowers are very freely produced from the axils of the sparse, linear leaves towards the ends of the branches. They are solitary, drooping, about half an inch in diameter and sub-globose; dark red-brown on the outside and clear yellow within. This plant, which is now quite commonly cultivated in some London nurseries on account of the fragrance of its flowers, requires cool green-house treatment and should be potted and grown like a Cape Heath. It flowers in March and April. A figure of *B. megastigma* was published in the *Botanical Magazine*, t. 6046. C. S. S.

Milla biflora in our Gardens.—Mr. Pringle's interesting note, p. 20, reminds me that four years ago a large consignment of *Milla biflora*, *Bessera elegans*, and some other bulbs, from Mexico, were disposed of at auction in New York at ridiculously low prices. Most of these bulbs were purchased by Long Island growers, and have, since then, been grown by some of our florists for cut-flowers in summer, for the New York market. The bulbs are planted out in rows in spring, and cultivated by horse power as we do Tuberoses and Gladioli; in the fall they are lifted and treated like Gladioli or Tigridias. While out-of-doors in summer they grow well and bloom beautifully, seldom bearing fewer than two, oftener seven or nine flowers on a scape. The flowers are white and showy, and were picked every day for market. When left un-picked, they set and ripen seed freely. Seeds germinate easily.

Lilium Grayi.—I found this rare Lily, figured p. 19, perfectly hardy at Cambridge, Massachusetts, and as amenable to cultivation as were *L. Canadense* or *L. superbum*. Referring to my note books I find: "1882, July 2d—*L. Grayi* in full bloom; *L. Canadense* not yet in bloom, but its flowers are ready to open." "1883, July 2d—*L. Grayi* in full bloom; *L. Canadense* also in full bloom." The two species were growing near each other in the garden. Their general contour, to a casual observer, is very much alike. The most striking difference is in the flowers; while those of *L. Canadense* are always nodding and the petals reflexed, those of *L. Grayi* are never quite pendulous nor widely open, nor are the petals at all reflexed. The flowers of *L. Grayi* are of a darker red color than are those of the ordinary red *L. Canadense*, and the inner surface of the petals is more thickly spotted with dark purple spots.

Forcing Azaleas.—In order to have Azaleas to bloom early get them to make their growth early. It is not well to take plants that are in bud and bring them into brisk heat in order to bring them into bloom; better bring them into heat after they have finished blooming and get them to make their growth early, and in this way advance their time to bloom.

Cytisus Canariensis.—As soon as it has done blooming cut it back enough to give the plants a shapely, stocky form; then give them a thorough washing in warm water (at a temperature of 125° Fah.) to rid them of red spider, to which they are very subject, and a fortnight after repeat the washing. Do not repeat till they have started into fresh growth. It does not pay to keep over old plants; raise a few fresh ones from cuttings every year. Cuttings of the young wood strike freely. The plants are in their prettiest condition when they are two to three years old. W. F.

Grapes for Home Use.—I cordially agree with Mr. Williams' notes on a choice of varieties. The kinds he has named have thrived well on my grounds and have yielded good fruit. The shores of the Hudson are better adapted to the growth of the vine than the greater part of New Jersey, and we can cultivate successfully some of the more delicate and fastidious sorts. The Iona appears to me to be the most delicious of all the Grapes and is well worth a trial. The Agawam and the Lindley have proved with me good growers and abundant bearers. The fruit is superior in quality, but the clusters are rarely compact and handsome. This defect is of minor consequence in the home garden, where flavor is of the first consideration. On warm, well-drained slopes I can ripen the Isabella and Catawba, and I should be sorry to be without these old and superb varieties. We need late as well as early Grapes. The Bacchus is known almost exclusively as a wine Grape, but about the middle of October it becomes a fine table sort. I have about 112 varieties growing on trial, and hope to be able hereafter to offer some more definite and practical notes.

E. P. Roe.

The *Retinisporas*.

THE generic title of *Retinispora* for a peculiar group of Japanese Conifers, is quite expressive, as it relates to its main distinctive feature, *i. e.*, "retine," resine, and "spore," seed, in allusion to the numerous little resinous vesicles found dotted over the surface of the seed-covering.

Since this genus was established by Siebold and Zuccarini, these resin-dots have been detected in other members of the *Cupressineæ*, notably in *Cupressus Lawsoniana*, and as the other characters were unimportant, *Retinispora*, consequently, can no longer stand. Dr. Maxwell T. Masters, in his admirable paper on the "Conifers of Japan,"* read before the Linnæan Society of London, has very justly reduced the former genera *Retinispora*, *Biota*, *Chamæcyparis* and *Thuioopsis*, to sections of the old genus *Thuja*, and after a careful examination I am ready to concur in his classification.

The object of this paper is to review briefly the most valuable Conifers which have been popularly cultivated under the heading of *Retinispora*, but in the interest of correct nomenclature it has been deemed advisable to adopt Dr. Masters' arrangement.

Perhaps the most satisfactory species for all purposes, is *Thuja pisifera* (*R. pisifera*), a medium-sized tree found in various localities throughout Japan, especially in the mountain districts. This Conifer has proved entirely hardy in the Middle States, growing rapidly when fully established, and forming graceful and attractive specimens with little care. The following have been reduced to varieties of the above species, and although differing widely in general appearance, the organs of fructification in every instance point conclusively to their origin.

Var. *plumosa* (*R. plumosa*) is one of the most valuable forms of this group. The young branchlets have been compared to ostrich plumes, on account of their graceful habit and feathery growth. It forms a compact, small specimen, with numerous small, pointed, bright-green leaves, and in rich, light soil soon forms a conspicuous object on the lawn. The variegated sport from this variety is one of the most distinct and best Conifers of its class for planting in the mixed Conifer border, and its rich, golden tints, especially in early summer, brighten up a mass of dark foliage with remarkable effect.

There is another attractive sport from this variety that has been introduced into our collections under the name of *R. plumosa argentea*. It differs from the above in having numerous little pure white dots scattered over the foliage in an interesting manner. It has the merit of not scorching as so many variegated plants do, and although not remarkably distinct, it is nevertheless entitled to notice.

Var. *squarrosa* (*R. squarrosa*) of Veitch, for there are two distinct forms of this variety under the same name, is perhaps next in importance as a small evergreen tree. Although it is claimed by some writers to be a form of *T. obtusa*, the fruit is identical with *T. pisifera*. An accidental sport from a specimen growing in the Lawsons' nurseries, at Edinburgh, afforded additional evidence of its *pisiferoid* character. It is a remarkably elegant, dense-growing Conifer, with peculiar silvery foliage, and is rarely injured by the severity of our winters after reaching the age of eight or ten years. To preserve a fine conical outline, specimens should be sheared annually for a few years after planting. The other form, which is known in some collections as *R. squarrosa* of Siebold, is not so hardy as the above, and is undoubtedly nothing more than *T. pisifera* or *T. obtusa* in an abnormal state. It is rarely satisfactory excepting when very young.

Var. *filifera* (*R. filifera*) is a peculiar form with the same whip-like branches and branchlets that characterize the pendulous variety of the Chinese Arbor vitæ; indeed it has been surmised that this variety may be another form of *Thuja orientalis*. It is, however, much more elegant than the latter, being entirely devoid of stiffness, and in time develops into a large evergreen shrub with the outer surface completely covered with a mass of slender, drooping, bright-green shoots. It is quite hardy, and desirable even in the smallest collection.

Var. *aurea* (*R. pisifera aurea*) is a distinct and showy form that originated in an English nursery a few years since. The foliage, both old and new, is plentifully marked with a bright golden-yellow tint, which, in partial shade, is retained throughout the summer months. In some localities it becomes discolored when exposed to the full rays of the sun. It is very distinct when placed among other forms.

T. obtusa (*R. obtusa*) is a hardy, valuable tree for this country, although inferior as an ornamental specimen to the preceding species. On the Island of Nippon, in Japan, it

attains a very large size, and forms extensive forests, the timber being in great demand. Its general aspect is open, and on this account it will not prove so popular as many of our own Conifers. This defect, however, may be remedied in a great measure by a systematic annual pruning in the tree's younger years, to increase the number of its branches. It is readily distinguished from *T. pisifera*, but more especially in the size of its strobiles, which are from seven-eighths of an inch to one inch in diameter, while those of the latter are only three-eighths of an inch in diameter. The varieties of the two species are also very distinct. As is the case with most Conifers of long cultivation *T. obtusa* has many curious morphological forms. Some of these are very attractive and deserving of general cultivation, but others are unworthy of dissemination.

Var. *lycopodioides* (*R. lycopodioides*) is the most distinct of all of these recognized varieties, and with generous culture in proper soil it is exceedingly pleasing. The foliage is of the darkest shade of green, and is remarkable in its arrangement, frequently imparting to the numerous short branchlets an appearance of dark-green coral. The habit of the plant is rather dwarf, dense, and irregular in outline, at least for several years after planting, and its constitution is hardy and reliable. In fact, it may be classed as one of the best of this group for general cultivation.

Var. *filicoides* (*R. filicoides*), the elegant fern-like variety of this group, is entirely satisfactory when in its young state, but we have no knowledge of its behavior at maturity, or even at eight or ten years of age. Its cones although smaller than those of its parent show the specific relationship. Many of the small branchlets are flattened out in a peculiar manner which has been likened to the fronds of a fern. The color is especially pleasing, being of a bright-green tint, with the usual glaucous lines on the under side. It appears to withstand the severity of our variable winters as well as its congeners, and in congenial soil quickly develops into a charming evergreen shrub. Judging by its manner of growth, however, it may not become so dense as some, but its other pleasing characters may recompense the owner for the loss of this.

Var. *nana* (*R. obtusa nana*), and Var. *pygmaea* (*R. obtusa pygmaea*), are choice little dwarfs, best suited for the outer edge of clumps and mixed borders. Of the two, the latter is much the smaller plant, with spreading habit and attaining only the height of one foot. They are both hardy and well adapted to our climate.

The variegated forms of this group of Conifers are very numerous, but as they are not especially interesting to the American planter they are omitted from this list. Others again differ from the species in being more slender in growth or dense in habit, etc. There is here a broad field for experiment and research, and Japanese gardeners have not been idle in hunting them up. Their collection of these pretty little oddities is almost beyond number. Many of them, however, are of no possible use for gardening effect, and their culture here would be a mere waste of time and money.

West Chester, Pa.

Fosiah Hoopes.

Snowberry Jelly.

MY attention was recently called to an interesting use of the Creeping Snowberry (*Chiogenes hispidula*, Torr. and Gr.) which may prove of sufficient novelty to warrant calling attention to it. A friend forwarded a small pot of jelly, with the request that information be given as to the material of which it was composed.

A superficial examination showed the jelly to be of the color of amber, and about the consistency of Guava jelly. This I subsequently learned to be due to an accident, owing to which very considerable consolidation had followed. The normal consistence is that of ordinary Currant jelly. The upper portion of the mass was quite clear, while at the bottom were numerous small seeds and much pulpy matter, giving a very peculiar character to the preparation, without, however, destroying its value. Upon submitting it to the taste, the flavor was found to be distinctly that of *Gaultheria*, although I have since been somewhat surprised to learn that so distinctive a flavor had not been recognized by several persons. Upon boiling out the pulpy deposit, it was found to consist of the berries constituting the material employed. Many of these were quite whole, so that their true nature was determined without much difficulty, and as we later learned that the berries in the fresh state were perfectly white, it was easy to refer them to the common Creeping Snowberry.

It appears that in Newfoundland, whence the jelly was obtained, it is a common practice with many families to prepare this exceedingly delicate preserve, but the scarcity of the berries,

*Journal Linn. Soc., xviii. 473.

to collect one quart of which an entire day is required, renders it a luxury, and to obtain more than a small quantity is difficult.

The comestible qualities of these berries are well known, and are referred to by Purvancher, "Baies d'un blanc pur à la maturité, très sucrées, comestibles."

The same author further remarks that "Les feuilles et les fruits ont une saveur analogue à la Gaulthéria ou à l'écorce du Bouleau-Merissier. On en fait des infusions d'un goût fort agréable, dont on use en guise de thé dans certains endroits de nos Campagnes."* It is also of interest to note that the local name of this plant, i. e., in Newfoundland, is Capillaire.

The use of the berries of *Chiogenes* as a source of jelly, suggests that the fruit of its near relative, *Gaultheria*, which is certainly more abundant, might be utilized in a similar manner with equally good results.

McGill University, Montreal, March 17th, 1888

D. P. Penhallow.

Correspondence.

"Landscape Gardening—A Definition."

To the Editor of GARDEN AND FOREST:

Sir.—The thoughtful article under the above caption in the first number of GARDEN AND FOREST is needed to correct a current misconception concerning the sphere of the landscape gardener. Mere ingenious design, skillful arrangements of bedding plants and conspicuous eccentricities, are frequently mistaken for landscape gardening. Many self-styled landscape gardeners are responsible for this absurd error. They hide and destroy the very art which they profess to cultivate. Flower beds, fountains, and other objects which should be mere accessories, are made the leading features in many parks. To these objects the people point as examples of landscape gardening! With the same reason one might call a handsome dormer-window a complete example of architecture!

As Fine Art is a conception of the mind, it follows that, in order to render it material, tangible, we must employ some mechanical or industrial art. The architect depends upon the carpenter and mason for the labor of construction. So landscape gardening, the Fine Art, depends upon the industrial art which shapes the ground, plants the trees, makes the walks and drives. This industrial art is no doubt a legitimate branch of horticulture. It is the sphere of the artisan. To call this artisan an artist, a landscape gardener, is like calling the amanuensis who writes the conceptions of Longfellow a poet. In my own teaching I have given this industrial art the name Landscape Horticulture, for such it is. Nearly all our professed treatises upon landscape gardening do little more than designate the most important rules and operations of landscape horticulture. This is the case largely of necessity, for it is a difficult matter to give adequate instruction in a Fine Art. It does not deal in formulas. But horticulture allows of closer rules, and for convenience of treatment I divide it into four broad divisions: Pomology, Olericulture or Vegetable Gardening, Floriculture, Landscape Horticulture.

Michigan Agricultural College.

L. H. Bailey.

Fraxinella.

To the Editor of GARDEN AND FOREST:

Now when garden-lovers are beginning to think about plants for the coming season, and when so many new ones are being brought to their notice through your columns, may I say a word in behalf of an old flower which ought to be more often seen?

Fraxinella (*Dictamnus Fraxinella*), a native of Southern Europe and some parts of Asia, has been cultivated for fully three centuries in England and was esteemed by our grandmothers with the best of those flowers which we call "old-fashioned." To-day it seems almost forgotten. I have chanced to see it only once—in a garden near Boston—and although I have spoken of it to many persons, I have met none, except the owners of this garden, to whom it was familiar.

It belongs to the Rue Family, and is a perennial herb with an almost woody base and very graceful foliage—the pinnate leaves with many serrate leaflets, like those of the Ash on a smaller scale, having given rise to its common name. The flowers are rather large and borne in a long terminal raceme in summer. In one—the prettiest—variety, they are white; in the other, Gray, in the "School and Field Book of Botany," describes them as "pale purple with reddish veins," but I should call them dull pink with reddish veins. Their irregular shape—unique in the Rue Family—their size and arrangement, suggest in some degree the Larkspur, but *Fraxinella* is more delicate and graceful. Its chief distinction lies, however, in its odor. Gray calls this odor

"strong and aromatic," and it is this and more—very strong, very aromatic, very sweet, and quite unlike the scent of any of our common garden-blossoms. There is a hint of vanilla about it, and a certain richness and penetrating quality which betray its southern origin. Yet, although rich, it is not heavy, but as fresh as the smell of lavender. *Fraxinella* is also an object of interest from the fact that the volatile oil generated by its flowers is so strong that on warm, still, summer evenings a lighted match held a foot above them will cause a flame to burst forth.

Philip Miller, in his "Gardener's Dictionary," published in 1724, says of *Fraxinella*: "These plants continuing a long time in Beauty, are very great Ornaments to a Garden; and their being very hardy, requiring but little Culture, renders them worthy of a Place in every good Garden." *Pequot*.

New London, Conn.

[*Dictamnus Fraxinella* ought not to be uncommon in American gardens. It deserves a place in every collection, however select, of hardy herbaceous plants. It is easily propagated by seed or division, and will flourish in any garden soil.—ED.]

The Forest.

Forest Trees of the Far North-west.

THESE notes refer to an area which includes the extreme western part of British Columbia, with adjacent portions of the North-west Territory, as well as part of the "Coast strip" or southern part of Alaska. The area is embraced in a general way by 56° 30' and 63° north latitude, the 128th and 138th degrees of west longitude. Through this almost unknown portion of the continent a geographical and geological reconnaissance was carried last summer by the writer, on behalf of the Geological Survey of Canada.

The region in question is drained by the Stikive and other rivers which flow through the coast ranges to the Pacific, by the Liard, a main tributary of the Mackenzie, and by several branches of the Yukon. These large rivers form routes of travel through the country, but the several drainage basins do not constitute regions of diverse Floras. The great division from this point of view, is found between the humid climate of the coast and the relatively dry and extreme climate of the interior; the first constituting the continuation of the botanical region of the British Columbian coast, the second that of the interior of the same province. The considerable altitude of the interior also has its influence on the vegetation. The average "base level" or valley level of the interior is about 2,500 feet. Difference of latitude shows a comparatively small effect, in consequence of the fact that the country as a whole becomes lower northward. The region may, generally speaking, be described as mountainous, though there are as well large tracts of low lands and the river valleys are generally quite wide.

The chief facts to be recorded with respect to the distribution of trees are those bearing on the northern limits of the well known western forms, the number of species represented so far north being quite restricted. In the interior region, which may be treated as a whole, the Douglas Fir, Engelmann's Spruce, the Hemlock (*Tsuga Mertensiana*), and the red Cedar (*Thuja gigantea*), all common and characteristic trees a few degrees to the south, are nowhere found. The White and the Black Spruce (*Picea alba* and *P. nigra*), Balsam Fir (*Abies subalpina*), Aspen (*Populus tremuloides*) and Cottonwood (*Populus trichocarpa* probably with *P. balsamifera*) occur in suitable localities over the whole region east of the Coast Mountains, the two first-mentioned trees constituting probably half the entire forest-covering of the country.

The White Spruce, along the rivers and in low ground, forms fine well grown groves in which many trees attain a diameter of two feet, to the most northern point reached, and affords timber of fair quality. It is found with *Abies subalpina* at the upward limit of forest growth on the inland mountains, about 4,200 feet. The Black Spruce has scarcely received mention in previous notes on the distribution of trees in British Columbia, but is now known to be abundant locally on high plateaus about the region of the upper Fraser, and in the country here described is common in swampy places and along shaded river-banks with a northern exposure. It attains a considerable height, but is never large enough to afford good lumber. *Abies subalpina* was found wherever the upper limit of trees on the mountains was approached, but was not observed near the rivers, except on Bennett Lake, near the head of the Lewes, in latitude 60°, where it is very abundant. The Aspen is especially characteristic of second-growth woods and dry open grassy hillsides, of which there are many along the Pelly and Lewes branches of the Yukon. The Cottonwood here

* *Flore Canadienne*, 363.

represented is, in so far as the specimens brought back can be determined, *Populus trichocarpa*, but there is little doubt that the Balsam Poplar also occurs. Trees six feet in diameter were seen on the Stikive River, but further inland they were very rarely found to reach a diameter of three feet.

Greater interest, from a botanical point of view, attaches to the trees of which the ranges are more restricted. The Black Pine (*Pinus Murrayana*), so common in the interior to the south, is also pretty widely distributed in this northern country. It is found in abundance on the Stikive immediately to the east of the coast mountains and thence inland. It was observed on the Dease and Upper Liard, and from the mouth of the Dease (according to specimens sent back by Mr. R. G. McConnell), down the Liard to Devil's Portage, some miles east of the range which appears to represent the northern continuation of the Rocky Mountains proper. Further east, the Banksian Pine becomes characteristic of the great valley of the Mackenzie, which is here entered; but this tree does not extend to the west of the Rocky Mountains, on the head-waters of the Liard. *Pinus Murrayana* reaches nearly to Finlayson Lake, its most northern source, but does not occur on the Upper Pelly, in descending which it was first met with in longitude 133° 30'. From this point, down the Pelly and up the whole length of the Lewes, it is moderately abundant. On the authority of Mr. W. H. Dall's northern limit of this tree has been given as at the confluence of the Pelly and Lewes (lat. 62° 49'), but as it there shows no sign of having reached its extreme point, it may probably be found some distance further northward in the Yukon Valley, though not as far as the mouth of the Porcupine, in latitude 66° 33'.

The known range of the common Larch (*Larix Americana*) has by the observations of the past summer been definitely carried to the west of the Rocky Mountains. It extends westward on the Dease River to a point twenty-two miles above the mouth of that stream, and along the upper Liard and Frances Rivers spreads northward nearly to Finlayson Lake, reaching latitude 61° 35'. Between these limits it is abundant and characteristic of cold, swampy ground. It was looked for all along the Pelly, but not found either on this or the Lewes branch of the Yukon. It appears probable, however, that this tree will eventually be proved to characterize the sub-arctic country, further to the north, from the Mackenzie Valley nearly to the shores of Behring Sea, as Dall, in his well known work on Alaska, mentions the occurrence of a Larch on the lower Yukon (as *L. microcarpa?* and *L. Davurica?*), which can scarcely be any other than this species. *Larix Lyallii*, which about the 49th and 51st parallels in the Rocky Mountains is the most characteristic tree at the timber-line, was not found in the region now in question and would therefore appear to be a relatively southern mountain species.

The Birch (*Betula papyrifera*) was first seen to the east of the coast mountains in the Stikive Valley and occurs sporadically along the river-valleys throughout the interior. It is quite abundant on Frances Lake, near the head of the Liard, but was not observed on the upper Pelly east of the 131st meridian.

Juniperus Virginiana was observed as a small tree, with trunks six inches in diameter, at Telegraph Creek on the Stikive in the dry country in the lee of the coast mountains, but was not elsewhere found in an arboreal form. The Alder (probably *Alnus rubra*) and one or more species of Willow become small trees along some of the rivers of the interior, the Alder being noted as specially abundant and large on the Pelly above the mouth of the Lewes.

As already noted, the timber-line was found to be at about 4,200 feet on the mountains of the interior near the watershed between the Liard and Pelly (lat. 61° 30'). At a similar distance from the Pacific coast, in the corresponding range of the Cordillera in latitude 51°, this line is at an altitude of about 7,000 feet, showing a descent to the north of 2,800 feet in ten and a half degrees of latitude, or about 280 feet for each degree.

It is generally stated that the influence of the warm waters of the Pacific "Gulf stream," reaching the northern part of the west coast and flowing southward along it, is such as to produce a nearly identical climate and Flora from the Strait of Fuca far to the north. While this is true in a general way, it is a mistake to suppose that no effect is produced by increasing latitude. The most marked change of climate, as indicated by the arboreal vegetation, nearly coincides with Dixon Entrance and the 54th parallel. North of this the forest is usually inferior in growth and the quantity of marketable timber is much smaller. The Red Cedar (*Thuja gigantea*) is not found in any abundance, north of the latitude of the mouth of the Stikive, and though closely looked for along the coast in the vicinity of Lynn Canal, no single specimen of it was detected there.

The Yellow Cedar (*Chamaecyparis Nuktaensis*) scarcely reaches Sitka, and is not anywhere found among the inner islands near the entrance of Lynn Canal. The Alder (*Alnus rubra*) forms groves along the shores at least as far north as latitude 59°. The western Crab-apple (*Pyrus rivularis*) occurs here and there as far north as Lynn Canal. The Broad-leaved Maple (*Acer macrophyllum*) may reach latitude 55° as stated by Prof. Sargent in his Census report, but was not observed by me, and must be rare. North of the Prince of Wales Archipelago, eight-tenths of the entire forest of the coast region appears to consist of the single tree Menzie's Spruce (*Picea Sitchensis*).

Pinus contorta was noted at the head of Lynn Canal and elsewhere along the coast. Here also, in the valley of the stream on the west side of the Chilkoot or Perrier Pass, by which the coast mountains are crossed, *Tsuga Pattoniana* grows to a fair size and forms entire groves. It was found as well within a few hundred feet of the summit of the pass at an altitude exceeding 3,000 feet, in a prostrate form, but still frequently bearing cones. *Abies amabilis* (?) was also noted in the valley of the west slope of the pass and occurs along Lynn Canal and other parts of the coast. Unfortunately no cones of this tree were found.

I am indebted to Prof. J. Macoun and Prof. C. S. Sargent for the determination of most of the specimens of trees collected.
George M. Dawson.

The Forests of New Jersey.

PROFESSOR Geo. H. Cooke, Director of the State Geological Survey of New Jersey, states in a recent report that the total area of woodland in that State amounts to 2,069,805 acres, or 41.5 per cent. of the total area of the State. The growing of Chestnut timber for railroad ties on the untillable lands of northern New Jersey is recommended, as there is always a demand for them by the numerous railroads crossing the State in every direction. Chestnut stump-land sells for from \$1.00 to \$5.00 per acre, a growth of thirty years at from \$10.00 to \$30.00 an acre; of fifty years from \$25.00 to \$50.00 an acre. But in many cases good growths, accessible to markets, have sold at figures three to four-fold greater. The value of the timber depends much on the soil and the location. The time required to grow ties and telegraph poles will average about thirty years. In the northern part of the State the Chestnut grows naturally, and brings the quickest and best returns, although Oak is more valuable when grown. It has been demonstrated that Locust timber can be grown with profit on the 250,000 acres of waste land on the cretaceous formation. It is possible to raise on good land a crop worth \$3,000 per acre in thirty years, and returns at the rate of \$2,000 are not uncommon. The growing of White Cedar timber is generally recognized as profitable. The value of stump-land is from \$5.00 to \$10.00; of twenty years' growth of timber from \$5.00 to \$50.00; of thirty-five years from \$15.00 to \$200.00; and of fifty years growth from \$75.00 to \$400.00. Of course, location and size have much to do with the price. A swamp of seventy years' growth recently sold for \$800.00 per acre.

The Pitch Pine (*Pinus rigida*) in the southern and central parts of the State attains a size suitable for firewood in about fifteen or twenty years. It is commonly estimated that it will produce as many cords per acre as it has been years in growing. The present value of Pine wood per acre standing averages about \$1.00. When the timber becomes larger, its value per cord increases, and it finds a market for lumber and lath, for piling and other purposes. The following figures are from estimates of men familiar with the Pine forests, and the wide range is due to difference in accessibility and the producing power of the land. Pine stump-land ranges from \$0.10 to \$5.00 per acre. Of course, this does not include the figures from localities where the land has a value of from \$10.00 to \$25.00 per acre for cultivation. The value of thirty years' growth of timber is from \$5.00 to \$25.00; of fifty years' from \$10.00 to \$100.00. Taking figures pertaining to the average of the better two-thirds of Pine land as a guide, the present conditions would give about the following results:

Cost of stump land, per 100 acres,	\$250.00
Taxes on average value, 30 years,	448.00
Policing and protection, 30 years,	120.00
Interest, at 6 per cent.,	450.00
Total expenditure,	\$1,268.00
Value of 30 years' growth, for 100 acres,	2,500.00
Value of stump land,	250.00
Total value,	\$2,750.00
Profit,	1,482.00

The interest on annually paid expenses is supposed to be offset by increase in value of stump land.

It is not to be supposed that proper protection and attention will not greatly increase the above profit. These figures represent the present values, depreciated by the results of neglect, and the uncertainty and loss caused by fires.

MONSIEUR Viette, the French Minister of Agriculture, by a recent decree has reduced the Forest School at Nancy to a subordinate branch of the National Agricultural Institute, an arrangement which not only destroys all independence in the management of the school, but compels its pupils to pass an examination in the theory and practice of agriculture—an unnecessary waste of time, it is claimed.

This radical and apparently unwise measure calls forth a loud protest from all the friends of the forest administration in France, who see in it a serious blow to the efficiency both of the school and the management of the forests. This famous school was established by the French Government in 1827. In it have been trained the officers who have made French forests and French forestry what they are, and here have been educated a large part of the Englishmen who have so ably seconded Dr. Brandis and his successors in their Indian forest administration. Any official interference that will impair the value of the Nancy school is a misfortune which must be felt far beyond the limits of France.

Recent Plant Portraits.

Botanical Magazine, February.

Amorphophallus virosus, t. 6978; a native of Siam.

Calogyne Massangeana, t. 6979; a native of Assam and closely allied to the Bornean *C. aspirata*, which it resembles in its large showy flowers borne in drooping racemes a foot long.

Salvia scapaformis, t. 6980; a native of Formosa, with rather small, clear blue flowers.

Aloe Hilderbrandtii, t. 6981; a native of east tropical Africa.

Oncidium Jonesianum, t. 6982; a native of Paraguay and considered by Sir Joseph Hooker "by far the handsomest species of the small group to which it belongs and of which the type may be considered to be the long-known *O. Cebolleta* of the Spanish Main."

March.

Vanda Sanderiana, t. 6983; a free flowering, showy species from the Philippine Islands.

Primula geraniifolia, t. 6984; a neat species with small purple flowers, perfectly hardy at Kew.

Mesembryanthemum Brownii, t. 6985.

Heloniopsis Japonica, t. 6986; a dwarf, hardy, liliaceous plant, a native of Japan and Corea, with the habit of a large-flowered *Scilla*, and drooping, racemose, deep pink flowers.

Onosma pyramidalis, t. 6987; a native of the western Himalayas, "a very handsome plant, conspicuous for the bright scarlet of the flowers, which turn of a mauve-purple as they wither;" not hardy at Kew.

Massachusetts Horticultural Society.

THE Spring Exhibition of this Society was held at Boston last week and was most successful in the abundance and quality of the bulbous plants and flowers displayed, owing to the medals and special prizes offered to promote the cultivation of this class of plants. In form and color these flowers distinctly excelled the exhibits of former years. Cut blooms of Roses of all classes made another striking feature, and with them were a few well grown plants in bloom of the beautiful but scentless "Her Majesty." Orchids were not so numerous shown as at some former exhibitions, although there were some notable specimens in the collection. A fine *Dendrobium nobile*, exhibited by Norton Brothers, showed more than 800 flowers. An Appleton medal was awarded to this vigorous plant. C. M. Atkinson, gardener of Mr. J. M. Gardner, contributed a *Cattleya intermedia* with forty flowers, and W. A. Manda sent a *Dendrochilum glumaceum* with as many spikes. A few examples of the late and rare *Odontoglossum Pescatoria* came from the collection of Mr. H. H. Hunniwell, as did a striking plant of *Gloneria jasminiflora*. The Heaths and Azaleas were especially good. Complaint was made of insufficient room for the proper display of contributions, but the plants and flowers were tastefully arranged, so far as the accommodations would permit.

Flower Market.

NEW YORK, March 23d.

The dullness in trade, and glut of cut flowers early this week, is almost unprecedented in the experience of Metropolitan florists. American Beauty Roses have been sold at 6 cts. each wholesale, and retailed for 25 cts. Jacqueminots were sold for 2 cts. wholesale. This, of course, was not for selected stock. Syringa, Mountain Laurel and Heath, growing in pots, are brought in for Easter novelties. Rhododendrons, Azaleas and Genesta of great beauty also appear. Plants of Mountain Laurel cost \$3; Heath, from \$2.50 to \$5; Genesta, \$2.50, and Rhododendrons, noticeably Cunningham's White, are \$4. Beauty of Waltham Roses have been added to the galaxy of hybrids; they are \$5 a dozen. Fine La France Roses sell for that price, but this Rose daily declines in favor. Puritans have improved, and are very large and perfect. They cost 50 and 75 cts. each. Jacqueminots, selected, bring from \$1 to \$3 a dozen. Hybrids sell from \$3 to \$5 a dozen, according to quality. Gardenias are in good demand at 25 cts. each. *Narcissus poeticus* is \$2 a dozen. Dutch Hyacinths cost from \$1.25 to \$1.50 a dozen. Lilacs are \$1.25 and \$1.50 a bunch of the best stock. Neapolitan Violets are plentiful, and cost from 75 cts. to \$1 a hundred. Marie Louise and White Violets sell for from \$1 to \$1.50 a hundred. Mignonette costs from \$1.20 to \$1.50 a dozen spikes. Smilax is 40 and 50 cts. a string. *Asparagus plumosus* is \$1 a string, and *A. tenuissimus* 75 cts. a string. There are few or no orders for designs for Easter offerings or memorial tokens for the altar. Boxes of cut bloom are preferred for gifts, and expressive arrangements of plants and flowers on the altar *in memoriam* will be the rule.

PHILADELPHIA, March 23d.

From one part of the city comes the report that the past two weeks has been the dullest known for many years. Happily this does not represent the state of the trade in general. The demand for flowers, though not excessive, has been satisfactory. Some very large, fine and highly-colored Magna Charta Roses are to be seen in the florists' windows; also a few exquisitely formed and tinted Captain Christs. It is surprising there are not more of the latter grown, for it certainly is one of the most beautiful varieties. A seedling Rose of European origin is on trial in this city, which promises to be widely known if it can be grown generally as well as a specimen flower which was exhibited here a few days ago. It is said to be a true Tea; but if the flower itself were seen without foliage no one would suspect a drop of Tea blood in it except perhaps from its color. It is rather a difficult tint to describe, reminding one—without an opportunity for close comparison—of Bourbon Queen. In form it is almost perfect, being cup-shaped, similar to Baroness Rothschild, opening regularly and full to the centre. It is very large, and altogether a remarkable Tea Rose. Tulips are in demand at \$1 per dozen, as also are Lilies-of-the-Valley, and Daffodils at same price. Extra fine Mignonette sells at \$3 per dozen. This comes from Summit, N. J. *Primula obconica* is offered in limited quantities at 75 cts. per dozen. This is quite new here as a cut flower. Smilax has become scarce. A supply from other cities will have to be obtained for Easter. Orchids are grown in very limited quantities in this city. The stock carried by the leading florists is obtained from New York and Boston. Of Roses, Md. Gabriel Luizet sells from \$6 to \$9 per dozen; Captain Christy and Magna Charta, \$4 to \$6 per dozen; Mrs. John Laing, \$4 per dozen. Heath, per dozen sprays, \$3. Jacqueminots are good, and sell from \$3 to \$5 per dozen. American Beauties are improving in quality, and are not displaced by the hybrid Remontants, as was predicted would be the case at this season of the year. They sell at from \$3 to \$6 per dozen. Longer stems are being cut of the Beauty than can be cut with the Remontants. Fine Puritans are better than the best Merveille de Lyons just now. Spring flowers generally are very popular. A few bunches of Trailing Arbutus were noticed in some stores. It is a great favorite in this city.

BOSTON, March 23d.

The severe storm had a demoralizing effect on the cut flower trade here and the florists here have found it a rather dull time ever since. Prices have not changed much since last report, some varieties being quoted at a slight reduction. By the time this report appears it is probable that Easter prices will be more acceptable than those of the present moment. Lilies of various kinds will be fairly abundant and quality will be of the best. Harris's Lilies and "Longiflorums" will cost from \$5.00 to \$6.00 per dozen on long stems, Ascension Lilies (*L. candidum*), from \$2.00 to \$3.00 per dozen. The price of Lilies-of-the-Valley, Tulips, Narcissus and similar flowers will increase but little, from \$1.00 to \$1.50 per dozen being the price now asked in advance. Callas have been blooming very heavily and the prospect is not encouraging for a large supply. Florists are now asking \$6.00 per doz. for Easter delivery. In roses there will be a magnificent supply. Some of the best growers of Jacqueminots and other hybrids have timed their houses to bring the height of the crop in at Easter, and there will be no lack of good material for Rose fanciers to select from. Those who are regardless of expense will find fancy varieties as high as \$10.00 to \$12.00 per dozen while more modest customers can get Bon Silene, Safrano, Niphotos and other fragrant and pretty kinds for \$1.00 to \$1.50 per dozen. Large Ferns, Massive Palm foliage, Laurel, Smilax and other greens will be used largely for decorative purposes. The usual supply of Marguerites, Mignonette, Carnations, Forget-me-nots, Pansies, Violets, etc., for mixing with assortments of cut flowers, will be offered in abundance.

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Trees for Planting in America.

AT this season of the year many persons who desire to beautify the surroundings of their homes by planting, seek instruction with regard to the trees best adapted for their purpose. Instruction upon this subject, especially in a country like the United States, of such varied climatic and social conditions, is difficult to give; sources of information are neither numerous nor very available. Planters are too often obliged to rely upon the advice of dealers and plant-peddlers in the selection of their trees. Such advice is often based upon imperfect knowledge, and nurserymen too frequently recommend the rarest and most high-priced trees or those most easily and therefore cheaply raised in nurseries, without regard to their fitness to the situation for which they are intended. People who would gladly plant trees become discouraged by the difficulty of learning what varieties they can use to the best advantage, or by the failures and disappointments which invariably follow errors of selection.

There is, however, one safe rule in the choice of trees which all persons who are unfamiliar with the subject can safely follow. This rule is to plant only such varieties as they see growing and thriving naturally in the neighborhood of their homes. No teacher in such matters is so wise and so unprejudiced as the forest. The Elms and Maples taken from the adjacent swamps and hillsides, —many of them now more than a century and a half old— which grace the streets of some of the older towns or adorn the early homesteads of New England, and the Magnolias, Live Oaks and Water Oaks seen in the cities and plantations of the South, abundantly testify to the truth of this fact. These are the only really successful examples in America of tree-planting as tested by time. In England, too, it is the native Oaks and Elms and Beeches which give to the land its distinctive aspect, and to its homes their greatest dignity and beauty.

Fortunately, we are abundantly supplied with American trees. In the South, the great evergreen Magnolia, unsurpassed in beauty, the Live Oak, the Water Oak—one of the best of American street trees—the Laurel Oak, the Pecan, the Bays, and many other beautiful native trees, are available to the planter. And it is fortunate that he has been obliged to make use of this material by the fact that few foreign trees of large size will thrive in that climate. In the Pacific Coast States, on the other hand, the conditions which govern planting are different. There are comparatively few native trees and these are confined chiefly to the mountains and the uninhabited portions of the country. The few which grow in the valleys are not in all cases ornamental, and are often difficult to cultivate. There are, however, exceptions. Some of the noble California Oaks surpass in stately beauty any exotic trees which are likely to flourish in that peculiar climate, and serious attempts to cultivate them should be made. And two California Conifers—the Monterey Cypress and the Monterey Pine (*Pinus insignis*)—are already widely and successfully grown from Vancouver's Island to San Diego. Fortunately they are both beautiful representatives of their class. Yet California will doubtless always be obliged to depend somewhat upon other parts of the world for her materials for ornamental planting. The trees of the Eastern States do not flourish there, and it is not probable that those of either Europe or Eastern Asia will ever gain much foothold on California soil. It is to Australia and other dry countries that California planters must look in the future, as they have in the past with such apparent success in the case of the Eucalyptus and of various Acacias.

The settlers of the dry interior region of the continent have not yet found any tree as valuable as the native Cottonwood which fringes the river-banks of all that territory, to protect their farms and orchards and to supply them with fuel.

It is, however, in the Eastern and Middle States that the greatest interest in ornamental planting has been felt, and that the greatest mistakes, arising from ignorance with regard to the true beauty and value of our native trees, have been made. It is in this part of the country that foreign trees have been most generally introduced and cultivated, to the serious injury of parks and homesteads. It is not easy to estimate the amount of this injury, or of the widespread discouragement which must be felt as trees carefully nurtured for a generation show themselves incapable of reaching maturity in our climate. We should have escaped much disappointment if, thirty years ago, our parks and gardens had been planted with native trees instead of the Spruces, Oaks, Ashes, Maples, Pines and other trees of Europe. These trees have been and still are largely planted in this country. They grow rapidly for a few years and are more easily raised in nurseries than many American trees, and are therefore favorites with dealers; but it is now evident that their general introduction was based upon very insufficient knowledge and that their cultivation here has proved a failure.

There are, of course, exceptions. The English Elm has grown successfully in New England for a century; the White Willow is now as much at home in Eastern America as in Europe, and the Norway Maple almost equals here in beauty and vigor some of its American congeners. But, in general, planters in the Eastern and Middle States can do better than depend upon the forests of Europe for their trees. There are not less than a hundred and thirty native trees found in this region, or among the Alleghany Mountains where elevation produces a climate similar to that of more northern regions.

The Silva of no other part of the world is more rich in trees of ornamental value. Its Magnolias, Oaks, Hickories, Walnuts, Maples, Elms and Ashes, its Tupelo, its stately Tulip Tree, its great Rhododendron and Mountain Laurel, its Birches and Lindens, its Coffee Tree, Sour-wood and Sassafras, its Beech—the loveliest of our deciduous trees in winter, and in early spring when its leaf-buds are bursting

—its Chestnut, Yellow-wood and Wild Cherry, its Catalpas, its Persimmon and Silver-bell Tree, its Flowering Dogwood and Fringe Tree, its Liquidambar, Hackberry and Sumachs—among these is surely material enough to satisfy the planter of deciduous trees, however great may be his love of variety. And among coniferous trees there is none more picturesque in youth or more stately in maturity than our northern White Pine, none more graceful and dignified than our Hemlock.

Eastern Asia has given us the Ailanthus, the Pawlonia, the Flowering Apples, the Yulan Magnolias, the Ginkgo and the Mulberry, which are already perfectly at home here; and the similarity in climate and vegetation between that part of the world and our own, leads us to believe that many other Asiatic trees will permanently thrive with us. In addition to those mentioned, many young Japanese trees—especially Conifers—now help to beautify our gardens. But it must not be forgotten that we know no more about the behavior of these trees, as they approach maturity here, than we did of the Norway Spruce, the Scotch Pine and the English Oak when they were supposed to be the most valuable ornamental trees for planting in this country. And this is true also of the Rocky Mountain Conifers, now so largely planted at the East, and of all the exotic trees which have been introduced into California. Therefore, planters who are wise will confine themselves to native trees until arboreta and other experimental stations can definitely teach us which foreign trees can be safely admitted into American plantations.

Rainfall on the Great Plains.

THE future of the Great Plains, as the vast elevated region between the 98th parallel of latitude and the eastern base of the Rocky Mountains is generally called, is a matter of much importance to the American people. The question whether this region is to remain always a quasi-desert, the barren feeding-ground of a few half-starved cattle, or is to become the home of a large and prosperous agricultural population, involves serious political and commercial interests.

The rainfall is light and very unequally distributed. Moisture is insufficient to insure the growth of trees except along the immediate banks of the infrequent streams. Agriculture is precarious. The scarcity of rain is due to the remoteness of the region from any great body of water. It is effectually cut off from the Pacific by numerous lofty mountain ranges, and its only water supply comes from clouds charged with moisture from the Gulf of Mexico—moisture which they have pretty thoroughly lost before they reach the interior of the continent. Here are conditions which no action of man can influence. It is, however, the apparent belief of many persons—especially those more or less directly interested in the development and prosperity of the States and Territories in question—that the rainfall has materially increased since the advent of white settlers, and that this change is due to the trees which they have planted and to the breaking of the soil. That is to say, it is believed that small and for the most part widely scattered groves and belts of young trees—for the largest single plantation of trees in all the West does not exceed 650 acres in extent—and the ploughing up of a little land here and there, have been sufficient in a quarter of a century to alter continental climatic conditions.

The fact that several men of political and commercial position have recently undertaken to discuss the general question of the settlement of the Plains, has brought it again to public notice. It is an undoubted fact that in the past few years settlers have obtained a foothold considerably nearer to the eastern base of the Rocky Mountains than it was once supposed that crops could be raised without artificial irrigation. Mr. Henry Gannett of the United States Geological Survey in an authoritative article printed

in a recent issue of *Science*, shows, however, pretty conclusively that it is not an increase of rainfall that has modified agricultural conditions on the Great Plains, even if any such modification has really taken place. He has examined the rainfall records kept at twenty-six stations in Kansas, Nebraska, Colorado, Wyoming and Dakota, for periods ranging from six years to twenty-eight; the longest being that kept at Fort Leavenworth, Kansas. The stations are widely scattered from east to west in both the settled and the unsettled portions of this region. Mr. Gannett divides the results of these observations into two equal terms of years and adds the yearly rainfalls of each term separately. If settlement has increased the rainfall, the record for the years embraced in his second term should show the fact. The aggregate rainfall at all the stations during the period when the records were kept was in the first term of years 4,408 inches, and in the second term 4,468 inches, showing that there had been an apparent increase of 60 inches in the total rainfall, at all the stations, in a total of 310 years; or that 0.4 of an inch more rain fell in each year of the second than in each year of the first term—an increase which could not have made any perceptible difference in the agriculture of the region.

There is, however, no doubt, as Mr. Gannett suggests, that cultivation adds to the value of the rainfall. The surface of the Plains is naturally bare, compact, and but slightly protected by a covering of grasses. Water flows freely from such a surface and a large portion of the rainfall finds its way into the streams without permeating the soil. When the ground is broken up by the plough much more moisture is retained. The quantity thus retained increases from year to year, and the sub-soil becomes in time a reservoir from which the surface-soil draws moisture in times of drought. This is probably the true explanation of the fact that crops have matured on the Plains with a summer rainfall of only ten inches. But it must not be forgotten that the settlement of the Plains has been attended with great expense and with terrible suffering and loss of life; that in a region of such scanty and precarious rainfall any decrease in the amount during a single year must be attended with serious losses; that three or four succeeding years of drought must mean utter ruin to the farmer; and that the records long kept in other parts of the country show that such small variations are sure to occur with frequency.

The Study of Botany by Horticulturists.

ON three occasions after the late Professor Gray had given up the duties of college instruction, he was induced by the members of a Summer Course in Botany to deliver a few informal lectures. One of these, which can never be forgotten by the class in attendance, began in these words:

“You know the old and homely adage that ‘one-half of the world does not know how the other half lives.’ I may say that far more than one-half, even of intelligent people, do not know how they live themselves; they have only the dimmest and most vague notion of those arrangements in Nature, based on the vegetable creation, upon which their very living depends. And even if aware, in a general way, that plants nourish and support all animals, they do not know how it is done, nor have they the least idea of the beautiful harmonies that run through all plants, connecting one with another into a system, a symmetrical whole, a vegetable kingdom.”

Happily this censure is becoming less deserved than when these words were uttered. In our community there is an increasing interest in plants and in the laws which govern their growth and development. Much of this interest is due to the attractive manner in which Dr. Gray's educational works have placed before the American public the general principles of vegetable structure and life. And it is encouraging to observe that this interest appears to be

gaining ground not only among those who have abundant leisure for the examination of plants, but also among that large class to whom plants and flowers mean a livelihood. These latter having the requisite skill to turn their floral treasures to good account may sometimes plead their lack of time as an excuse for neglecting the study of the principles which underlie their practice. And, furthermore, it seems a formidable task to turn over the dry leaves of a text-book, when one has been working with fresh flowers all day, or has been planning picturesque landscapes with shrubs and trees and water.

In some countries a thorough study of the elements of botany is an essential part of the apprenticeship of an accomplished gardener, and such knowledge saves its possessor from many an error of judgment. Such acquisition is by no means so formidable a task as would at first appear, since a host of interesting and instructive elementary works is now easily accessible.

For one without a teacher, the task is not wholly free from difficulties, but none of these difficulties need be disheartening. A plain course designed to place any intelligent young person in possession of the more important facts and essential principles of elementary botany, might well begin with a thorough study of some such work as that noticed in our first number (Gray's "Elements of Botany"), and with the "Field and Forest Botany," by the same author. Let each point be illustrated from the living plants at hand, and let the main design of the two books be carried out fully—namely, to understand the plan of each flower, and to learn its relations to others. The mere ascertaining of the name of a plant in a convenient handbook is an easy matter, but if the easy work is well done, it brings out clearly many important features which might otherwise be overlooked. The study of the two books just mentioned ought to be supplemented by the collection and drying of such wild and cultivated plants as fall in one's way, making capital material for further study in the winter. In the "Elements," Professor Gray has given full directions for collecting and studying such specimens.

In the second season, the work should be somewhat wider in its range. With the "Elements" still as a guide, or sort of grammar, the student will begin to collect plants as before, but he will need some more comprehensive treatise, like the "Manual of Botany," for the determination of the wild plants collected; and now may be undertaken also the perusal of some volume like Bessey's "Botany," which will give much information regarding other plants than those which bear flowers. And, if possible, the student should now attempt to examine the minute structure or microscopic anatomy of the plants with which he deals. Either the "Manual of Plant Dissection," by Arthur, Barnes and Coulter, or the "Practical Botany," by Bower and Vines, will serve this purpose fully. The former is rather better for most of our American students, whose time is limited. Within the last year we have become acquainted with one young man who undertook a course similar in some respects to that here indicated, and the course had been successfully prosecuted under considerable difficulties. To that young man, the plants of his trade mean more than they have ever done before. Can it be thought that his skill in managing plants will be any the less for what he has learned regarding their life and peculiarities of structure?

For collateral reading while one is pursuing such a practical course as is here indicated, the following works are recommended: Le Maout and Decaisne's "System of Botany," "The Treasury of Botany;" works of travel, like Wallace's "Tropical Nature," Hooker's "Himalaya," Ball's "Marocco," Bate's "Naturalist on the Amazon," and the like. And, also, the charming and ever instructive works of Darwin, such as "The Power of Movement in Plants," "The Fertilization of Orchids," etc. From the wealth of interesting botanical reading, now brought within the reach of most horticulturists by means of the public libraries, it is easy to select trustworthy teachings, from which

those who get their living from plants may know in the fullest sense how the plants themselves live.

In horticulture—as, we are told, was the case in all other departments of human activity even so early as the time of the wise king of Israel—the novelties of to-day are apt to be merely the forgotten novelties of the past. A flowering Dogwood with pink bracts is now much talked of by nurserymen as something entirely new. But old Mark Catesby, a century and a half ago, found "one of these Dogwood trees with flowers of a rose-color;" and the tree having "luckily been blown down and many of its branches taking root," he was able "to transplant this variety into a garden." This garden was in Virginia where Catesby lived for a time, and a colored plate showing the pink-flowered Dogwood appeared in his work on the natural history of Virginia, Carolina and Florida, which was published in 1731 after his return to England.

Landscape Gardening—VI.

IN my preceding chapters I tried to explain the points of likeness and unlikeness that exist between landscape gardening and the pursuits to which we more usually give the name of Fine Arts. The explanation has been not only brief but fragmentary; but it will have fulfilled my purpose if it has shown with any degree of clearness that landscape gardening too should be called a Fine Art.

It remains now to ask, When and where do we need to exercise this art? The answer must be, Whenever and wherever we touch the surface of the ground and the plants it bears with any wish to produce an organized result that shall be agreeable to the eye. We must not be misled by the over-precision of our accustomed terms into thinking that art is needed only for the production of broad landscape effects. It is needed whenever we do more than merely grow plants for the sake of their beauty as isolated individuals. It matters not whether we wish to arrange a great park or a small city square, a large estate or a modest door-yard—we must go about the work in an artistic spirit if we want a good result. Two trees and six shrubs and a scrap of lawn and a dozen flowering plants may form either a beautiful little picture or a huddled little mass of greenery and colors. If it is the first, it will give us the truly æsthetic satisfaction we get from a good landscape painting—indeed, it will give us more than this, for the painted picture never varies, while the living one will reveal new beauties day by day with the changing seasons, hour by hour with the shifting shadows. If it is the second, it will please us only by the beauty of certain scattered details; and even these details will be intrinsically less delightful than had they formed part of an agreeable general effect. A good composition has been defined by Ruskin as one in which every detail helps the general beauty of effect; but it may also be defined, conversely, as one in which the general arrangement brings out the highest beauty of each detail.

The most cursory examination of any American town or summer colony of villas will show how deficient we are in artistic feeling when we deal with natural objects. The surroundings of our homes have improved by no means as rapidly as the homes themselves. Even in these we are far enough from having reached a general average of excellence. But we are on the right road, I think, towards its attainment. We have learned certain architectural truths, and we respect them theoretically, even though we may often err in their application. We do not expect to build a good house without an architect to help us; we do not expect him to begin without having a clear idea of the kind of house we want—of the special site it must occupy, the special needs it must fulfil, the special tastes it must meet; we are not content if he designs it by throwing together a number of pretty features without regard to harmony of effect; nor do we buy our furniture bit by bit as

passing whims dictate, and pile it casually about in our various rooms. At least there are not so many of us who do these things to-day as there were ten years ago; and all of us are well aware that they ought not to be done.

Yet they are just the things which almost every-one does outside his home. If he has "no taste for nature" himself, he puts his grounds into the hands of a gardener without inquiring whether he has any qualifications beyond a knowledge of how to make plants flourish. And if he has such a taste himself, it means, in a vast majority of cases, a mere love for being out-of-doors, for planting things, and for watching them grow. At the most, it is apt to mean no more than a taste for nature's individual productions—a love for trees, an interest in shrubs, a passion for flowers, or all these three together. The cases are very rare in which it means a taste at all analogous to what we understand by a taste for art; that is, an appreciation of organized beauty—of the beauty of contrasting yet harmonious lines and colors and masses of light and shade, of intelligent design, of details subordinated to a coherent general effect. Yet it is only such an appreciation as this which means a real taste for nature's beauty and which can make the surroundings of our homes really beautiful.

Of course, in this, as in every art, the "collector" has not only a right to exist, but an important rôle to play; but his is not the proper rôle to play when the adornment of one's home is the chief desire. When this is our desire, it is of far less importance what we have than how we have it. The quality of our plants is far more important than their quantity—and by quality is implied not rarity, nor even perfection of development, so much as fitness to the special places they hold in whatever general scheme may have been adopted. Composition, grouping, is the first great essential, even in a yard so small that shrubs must take the place of trees.

M. G. van Rensselaer.

Anglomania in Park Making.

WITHIN the area of the United States we have many types of scenery and many climates, but in designing the surroundings of dwellings, in working upon the landscape, we too often take no account of these facts. On the rocky coast of Maine each summer sees money worse than wasted in endeavoring to make Newport lawns on ground which naturally bears countless lichen-covered rocks, dwarf Pines and Spruces, and thickets of Sweet-fern, Bayberry and Wild Rose. The owners of this particular type of country spend thousands in destroying its natural beauty, with the intention of attaining to a foreign beauty, which, in point of fact, is unattainable in anything like perfection by reason of the shallow soil and frequent droughts.

I know too many of these unhappy "lawns." Ledges too large to be buried or blasted protrude here and there. They are bare and bleached now, though they were once half smothered in all manner of mixed shrubbery; the grass is brown and poor wherever the underlying rock is near the surface,—all is ugliness where once was only beauty.

Moreover, if the lawn were perfect and "truly English," how would it harmonize with the Pitch-Pines and Scrub-Birches and dwarf Junipers which clothe the lands around? No. The English park, with its great trees and velvet turf, is supremely beautiful in England, where it is simply the natural scenery perfected; but save in those favored parts of North America where the natural conditions are approximately those of the Old Country, the beauty of it cannot be had and should not be attempted.

To be sure, the countries of the continent of Europe all have their so-called English parks, but the best of these possess little or none of the real English character and charm. The really beautiful parks of Europe are those which have a character of their own, derived from their own conditions of climate and scene. The parks of Paulovsk, near St. Petersburg, of Muskau, in Silesia, of the Villa Thuret, on the Cape of Antibes in the Mediterranean, are none of them English, except as England was the mother of the natural as distinguished from the architectural in gardening. The Thuret park, if I may cite an illustration of my meaning, is a wonderland of crowded vegetation, of ways deep, shaded by rich and countless evergreens, of steep open slopes aglow with bright Anemones. Between high masses of Eucalyptus and Acacia are

had glimpses of the sea and of the purple foothills and the gleaming snowpeaks of the Maritime Alps. In the thickets are Laurels, Pittosporums, Gardenias, etc., from the ends of the earth; but Ilex, Phillyrea and Oleander are natives of the country, and Myrtle and Pistacia are the common shrubs of the sea-shore, so that the foreigners are only additions to an original wealth of evergreens. The garden also has its Palms of many species, with Cycads, Yuccas, Aloes and the like; but the Agaves are common hedge plants of the country, and strange Euphorbias grow everywhere about; moreover, the more monstrous of these creatures are given a space apart from the main garden, so that they may not disturb the quiet of the scene. M. Thuret saved the Olives and the Ilexes of the original hillside. He did not try to imitate the gardening of another and different country or climate, but simply worked to enhance the beauty natural to the region of his choice.

At the other end of Europe all this is equally true of Paulovsk. Here, at the edge of the wet and dismal plain on which St. Petersburg is built, is a stretch of upland naturally almost featureless, but which, thanks to a careful helping of nature, is now the most interesting and beautiful bit of scenery the neighborhood of the Tsar's capital can show. A considerable brook, in falling from the plateau to the plain, has worn in the gravel of the country a crooked and steep-sided valley, and this, the only natural advantage of the park-site, with its banks darkly wooded and the stream shining out now and then in the bottom, is the chief beauty of the completed park. The dead level of the plateau itself is broken up into irregular strips and spaces given to water, meadow, shrubland or woodland,—a pleasing intricacy. The grass is only roughly cut, the edges of the waterways are unkempt, the woods are often carelessly beset with Cornus, Caragana or Siberian Spiræa. In the woods are only hardy and appropriate trees—Oaks, Alders, Poplars, Pines and the like,—few trees are handsome enough to stand alone, but there are Spruces, pushing up through Scarlet Oaks, and White Birches set off against dark Firs and Prostrate Junipers spreading about Birch-clumps, and no end to the variety of similar thoroughly native and appropriate beauties. Here is no futile striving after the loveliness of England or any other foreign land; no attempting the beauty of a mountain country or a rocky country or a warm country or any other country than just this country which lies about St. Petersburg; here also is no planting of incongruous specimens and no out-of-place flower-bedding.

The park of Muskau teaches the same lesson, and under conditions closely resembling those of our Middle States. Indeed, American trees, shrubs and herbaceous plants are very numerous in this noble park; the Tulip-tree, Magnolia, Wild Cherry, Witch Hazel, Withe-rod, Bush Honeysuckle, Golden Rods and Asters are harmonized with native plants on every hand. It would be next to impossible to find an American park in which these things have been planted as freely.

Our country has her Russias, her Silesias, her Rivas; and many types of scenery which are all her own besides. Are we to attempt to bring all to the English smoothness? Rather let us try to perfect each type in its own place.

Boston.

Charles Eliot.

Conifers and their Cultivation.

IT is a point of theory that it is not safe to manure the land in which Conifers are planted, so that there will be any danger of bringing the fertilizer into direct contact with the roots; at the same time, I can affirm from the experience of many years, that every variety of this great and beautiful class of trees will prosper in a rich soil better than in a poor one, and in a soil that is moderately moist better than in one that is naturally arid. Yet it is true that when both coniferous and deciduous trees are planted in a very poor and dry soil the Conifers will be likely to do rather better than the others.

Most gardeners and cultivators of Conifers cherish the old English superstition that the great thing about a coniferous tree is its leader, the top shoot, which points directly upward and leads in the growth of the tree. If by any accident this shoot is broken off, they regard the plant as ruined; and if by accident, instead of one leader, there come to be two, the situation, in the opinion of these cultivators, is monstrous and without remedy. But, after many years' constant study and cultivation of Conifers of every kind—American, European, Asiatic—I am prepared to maintain that this superstition is even more absurd than the general run of such cranky creations of the human mind. There is no description of tree which stands the use of the pruning-knife better than the Conifer; and there is no part of a Conifer which

can more safely be cut off and thrown away than the leader. In fact, in the production of a perfectly symmetrical coniferous tree the first principle is the repeated extirpation of the leader. By removing it you throw the strength of the tree into the lower branches, and cause them to grow full, vigorous and beautiful. You need have no fear about the upward development of the plant. Nature will always provide a leader for it; and if you cut it off to-day, a new shoot will be there to take its place to-morrow. Some of the most beautiful Conifers that I have seen in the famous collections of England have been those whose leaders, notwithstanding all the care of the gardeners, have been broken off by storms, and whose general symmetry and vigor have been promoted in consequence. My practice in the treatment of these plants is to apply the pruning-knife constantly, though, of course, with judgment, and especially to keep down the leader.

Nothing is more necessary, however, than that the drainage of the spot where a Conifer is planted should be complete and unobstructed. A marshy spot, a stiff clay soil, or an impenetrable hard-pan near the surface, are all to be sedulously avoided. Every traveler who was in England thirty years ago will remember with delight the beautiful Douglas Firs near the nursery of Mr. James Veitch at Combe Wood. But a few years later they began to decline, and when I looked for them in 1886 they were gone. A dense hard-pan a few feet below the surface had done the business.

If my advice were asked respecting the sorts of Conifers which, for purposes of beauty and decoration, it is most advantageous to cultivate, the reply would be very much influenced by the facts of soil, climate, moisture and shelter from strong winds in the place designed for planting. No Conifers should be set out where they are subject to violent gales. They require shelter more than most kinds of deciduous trees. Our American White Pine especially illustrates the truth of this proposition, and so do the Canadian Hemlock and the Hemlocks of the Western coast (*Tsuga Mertensiana* and *T. Pattoniana*). The beautiful Japanese Hemlock (*T. Sieboldiana*) seems to stand the wind much better than either of its relatives. The Scotch Pine I am not able to praise in any respect except for its occasional transitory beauty, but the Austrian Pine, on the other hand, may be planted with confidence in its future form, color and duration, and especially in its power of resisting the wind; and on Long Island I have found it very useful as an outer shelter to protect more delicate kinds of plants against the gales. But this is a question of locality. At Castle Kennedy, in south-western Scotland—the most charming and enviable country-seat in the United Kingdom—they use for this purpose the exquisite and tender *Pinus insignis* of Southern California, which cannot be grown at all in our climate.

Next to the White Pine, the Canadian Hemlock and our common Juniper (*Juniperus Virginiana*), I have found the Red Pine (*P. resinosa*), the White Spruce (*Picea alba*), the Rocky Mountain tree formerly described as Menzies Spruce (*P. pungens*), and that beautiful Fir of the Rocky Mountains (*Abies concolor*), the most useful. With our Balsam Fir I have never been able to do much, because it needs more moisture than can be found anywhere except in a mountain elevation. *Pinus rigida* and *P. inops* I cultivate as a matter of interest, but without looking to them for any remarkable effects of beauty. The admirable long-leaved Pines of California and of the South are alike unavailable.

When we pass from the Conifers of our own hemisphere to those of Europe and Asia our resources are immensely enlarged. Among the most beautiful of these acquisitions the Retinosporas are to be classed as of the very first value. Similar to the Thuyas, they are more varied, more graceful and more lasting. In a soil of moderate moisture and in a year of reasonable rainfall, their growth and their color are lovely beyond description. Of the other Japanese Conifers *Abies brachyphylla* and the *Picea polita* seem to me the most valuable, while *Abies firma* should by all means be avoided on account of its irregular and shabby growth and its constant suffering from unfavorable weather both in winter and summer. *A. polita* is of exceedingly slow growth, but it stands every sort of climate, and when it is in perfect condition its color is delightful. *P. Orientalis* is also a treasure.

The Japanese Yew (*Taxus cuspidata*) is beautiful and hardy even in a severe climate, but its slow growth removes it from the category of plants for general and popular planting. The Cryptomerias are graceful and beautiful trees, and they grow rapidly, but they are not tough enough for our climate. *C. elegans* does not last out the winter, but *C. Japonica* will live with us, and I have seen it 70 feet tall on high land. Yet the frosts play the mischief with the lower branches, and it is no longer the fascinating plant whose charms bewilder every be-

holder. The *Glyptostrobus Sinensis* is much more available. Grafted on our ordinary southern Cypress (*Taxodium distichum*) it gains a height of 40 feet, and its slender, conical head and long, drooping foliage make it a most agreeable object.

I have had very fair luck with Yews and Cedars. With a very slight protection in the winter the Deodar flourishes in all its graceful beauty; but the Lebanon and the Atlantic are both of much slower growth and less graceful habit. The Atlantic, which comes from the mountains of Morocco, is much more hardy than the Cedar of Lebanon, though the latitude of the two regions is about equal.

Finally I have one piece of advice for the young planter, whether his purpose be æsthetic beauty or material profit; and that is, never to plant a Norway Spruce. One of the great misfortunes that have happened to the gardens and pleasure-grounds of our Northern States, is the introduction of this ugly and useless tree, which is never beautiful except in its old age; and even this beauty is so rare an accident that it forms an exception which no one can count upon beforehand.

Dosoris, March 15th.

C. A. Dana.

Wanted—A Hand-book of Horticulture.

THE number of manuals of horticulture in the English language is certainly very large, and yet it is not saying too much to assert that a really satisfactory work has yet to be written. An amateur wishing for useful information upon any point has usually to consult two, three or even more works before he can find all that he desires to know. The want of thoroughness in English works is familiar to all who use them, and by English works we do not mean only those which are published in England. Fortunately there is an excellent French work—the well known "*Fleurs de Pleine Terre*" of Vilmorin-Andrieux—which comes very near to the ideal treatise and is to be found in every good horticultural library. The third edition of this work was published without date upon the title page, but we believe about the year 1880. In 1884 a supplement appeared containing valuable additions, but still, as regards completeness, the work leaves something to be wished. What is in it is usually admirable and always to be depended upon, but the work is somewhat behind the times. The arrangement is alphabetical, the figures excellent, and the descriptions, as a rule, sufficient. In addition, however, to figures and descriptions, the work contains a rare amount of information upon horticultural topics generally most useful, and hard to find elsewhere. Thus, among other things very fully treated, we have a special list of seeds which may be planted in September; a selection of annuals and biennials; a selection of hardy plants; a selection of bulbous plants; a selection of plants for borders; a list of plants proper for carpet beds; a selection of climbers; a selection of fragrant plants, with a supplementary list of plants with fragrant stems and leaves; a selection of plants with ornamental fruits; a choice of plants with ornamental leaves in great variety and detail; a selection of hardy Ferns; a selection of aquatic plants, including several subdivisions, as, for instance, floating plants, submerged plants, half emergent plants, etc.; plants for rockeries; a list of plants growing in the shade; a selection of picturesque plants for lawns, and another of green-house plants which can be used for the open ground in summer; a list of plants for bouquets; a calendar of the seasons at which different plants flower; details of the arrangement of gardens, etc., etc.

The recent edition of Robinson's "English Garden" contains much valuable matter, and is deservedly a favorite in this country, but it is often very deficient in details and is not brought down to the date of its publication. German works on horticulture are very numerous, and it is hard to say which is the best, but here also the want of minute and careful detail is often keenly felt.

It seems worth while to consider what ought to be required in a good manual. In the first place, the alphabetical arrangement is certainly the most convenient. Now—given a particular plant—what the amateur and the educated florist wishes to know is, 1st.—the natural family, genus and species to which it belongs; its English or common name if it has one; the Latin name and its synonyms; 2d.—the character of the plant, whether perennial, biennial or annual, whether hardy, half-hardy or tender; 3d.—the exact description of the plant itself, with an estimate—not the salesman's estimate—of its precise horticultural value under appropriate conditions; 4th.—the country in which it, or the species of which it is a variety, is found growing naturally, and especially the natural conditions of its healthy growth as regards soil, climate, exposure, dryness

or moisture, sunshine or shade; 5th.—the details of its successful culture, with the experience of prominent horticulturists, given with thoroughness and critical knowledge; 6th.—any peculiarities which the plant may exhibit, bearing upon its reproduction, upon the probability of obtaining varieties from it by seed or by hybridization, with suggestions for trial; and 7th.—the advantages and disadvantages which the plant offers to the amateur of limited means and limited knowledge.

All amateurs know that in the annual catalogues of florists the merits of a plant are always very strongly and not always very truthfully stated, while its demerits are passed over in silence. Yet these last may be and often are of much greater importance. Let us have the whole truth about every plant, and have it in detail. One bulb about which nothing is said but that it yields a brilliant flower, does yield such a flower, lasting for an hour or two only. Another much lauded plant requires such an amount of care and attention—such coddling and nursing—as to make its culture, to say the least, very undesirable for most lovers of plants. A third blooms so late in the season, that in cool climates—upon the sea shore, for instance—it never yields a flower, or blooms only to be cut down by an untimely frost. Another requires a heavy covering of leaves in the autumn, to be removed at a certain time in the spring and with certain precautions. Now, what the amateur has to complain of is that no one work gives all that he wishes to know before purchasing a particular shrub, bulb or package of seeds, so that he can at once tell whether it is advisable to attempt the culture of what seems in the salesman's description so attractive. During the last twenty years a great deal of valuable experience has been gained in regard to the culture of plants in the open ground, and a large number of new plants has been introduced. The volumes of the *Gardener's Chronicle*, *Garden*, *Gartenflora*, *Revue Horticole*, and other periodicals, contain an ample supply of material at least for the purely practical part of a complete manual of horticulture. Some old books—Mrs. Loudin's quarto volume on bulbs, for instance—are not yet out of date, and contain some very valuable information not to be found in more recent works or not with the same amount of detail. Why should we not have a work on plants for the open ground, which should be made up of a series of brief but complete and thorough monographs giving all that is known about each plant? Plants which require to be wintered in cold-frames or green-houses should of course be included, but green-house plants proper, vegetables and fruits, should be omitted, because all these require special treatises. We should still have a large and probably somewhat expensive work, but one which would replace a library of other treatises—but the names of the best plants and best varieties need be given and only the best authorities cited. Ornamental shrubs could be admitted into such a work, but not trees, properly speaking. For these there should be a special treatise written upon the same plan. Such a manual as is here proposed might be the work of a number of writers, each taking a particular class of plants—a committee, for instance, of some prominent horticultural society. Properly divided among various co-laborers, the work could be finished in a comparatively short time. Figures are not absolutely necessary, though often convenient and sometimes very desirable, but they would greatly increase the expense of the work if numerous. It is possible that a good translation of Vilmorin's work, with the permission of the author, might serve as the basis of a new and greatly enlarged treatise. We want the experience of all the leading amateurs as well as of the professional gardeners, and we want a work which shall be a complete manual written in the highest scientific spirit, to be improved, added to, corrected and condensed as new editions may be demanded.

Newport, R. I.

Wolcott Gibbs.

Phlox adsurgens.*

MOST of the eastern species of *Phlox* have long been favorites in the gardens both of this country and of Europe. The ease with which they are cultivated, the abundance and long continuance of their flowers, and the variety of their coloring will account sufficiently for this. The tall perennial species, with compact inflorescence, and in numerous varieties, the annual Drummond's Phlox, with its looser, profuse bloom of manifold colors, and the evergreen Moss Pink, covering the soil in early spring with a carpet of flowers, are all equally well known. On the other hand, the species of the

**P. ADSURGENS*, Torr. in herb.: Gray, *Proc. Am. Acad.*, viii. 256. Glabrous, with the slender peduncles and calyx glandular-pubescent; stems about a span high, ascending from a procumbent base; leaves ovate or ovate-lanceolate, acute; corolla-tube more than twice the length of the short calyx, the segments of the rose-colored limb obovate and entire; style elongated.



Fig. 11.—*Phlox adsurgens*.

western part of the continent are totally unknown as ornaments of the garden. Most of them differ in habit from their eastern relatives, some being dwarf perennials, forming compact evergreen cushions, which in earliest spring are a mass of color, and the rest loosely tufted plants, with an open, rather few-flowered inflorescence. On the whole they do not promise to prove so valuable to the florist as are the eastern species, but skillful treatment may develop strains that will repay the trouble of trial. *P. nana*, which in the wild state varies greatly in color, *P. adsurgens*, and some of the caespitose species, are certainly not without merit.

Nearly all have narrow, or linear, or small and awl-shaped leaves, the only one with broader leaves, like most of the eastern species, being the one of which a figure is here given. This, *P. adsurgens*, is a rare species of the Cascade Mountains

of Oregon, where it was first collected by Professor Alphonso Wood in 1866. It has since been found by Mr. Cusick and Mr. Howell, and also by Mr. V. Rattan in the mountains of north-western California, in Humboldt County, growing on high ridges in the Fir forests. Its characteristics are well shown in the figure, —, its slender, ascending stems, ovate leaves, open, graceful inflorescence and long-tubed corollas. The flowers are rose-colored, appearing in July and August. S. W.

lateral branches of the year. Rarely more than a single fruit matures from each corymb of flowers; it is oval or obovate, hardly exceeding one-third of an inch in length, long pedunculate, and bright scarlet in color. The autumn color of the leaves is a brilliant scarlet.

Photinia villosa is a valuable addition to the free flowering and perfectly hardy shrubs which can be grown in the northern States. It was sent many years ago to the Arnold Arboretum



Fig. 12 —Photinia villosa.

Photinia villosa.*

THIS is a widely distributed and very variable Japanese deciduous shrub which, according to Maximowicz, sometimes attains in its native country a height of 15 feet. *Photinia villosa* (fig. 12), as it appears in cultivation in this country, is a vigorous shrub of neat habit, 4 to 6 feet in height, with broadly obovate rather coriaceous, sharply serrate, dark-green leaves 1½ to 2 inches long with prominent mid-ribs and primary veins, their under side, as well as the young shoots, petioles, peduncles and calyx, covered with a dense white pubescence. The corymbs of white flowers, which appear about the middle of June, are terminal on the short

by the Messrs. Parsons, of Flushing, under the name of "*Amelanchier* sp. from Japan." C. S. S.

Cultural Notes.

Epidendrum (Nanodes) Medusæ.—This is a somewhat rare and most singular looking Orchid, producing tufted, pendant stems about a foot long, with very fleshy grayish leaves arranged in pairs on each side. The flowers (usually 2-3) spring from the axils of the last pair, are flat and fleshy, sepals and petals are purple with a green base. The lip is large and spreading, deep maroon, transparent, and deeply fringed. It is a native of the mountainous regions of South America, consequently requires to be kept very cool. We succeed here admirably in a uniform temperature of 55° to 60°, with abundance of water, and if this is given overhead the thrips will not trouble it. Until quite recently this plant was very rare and large house grown plants are still the exception.

**Photinia villosa*, DC. Prodr. ii. 631.—Miq. Procl. 229.—Fran. & Savat. Enum. Pl. Jap. i. 142; ii. 351.—Maxim. Bull. Acad. St. Petersburg, ix, 176.
P. laevis, DC. l.c.
Crataegus laevis and *C. villosa*, Thbg., Fl. Jap. 204.
Stranvaesia digyna, Sieb. & Zucc. Fl. Jap., Fam. Nat. i. 129.
P. serrulata, Sieb. & Zucc. l. c. (not DC.)
Pourthiaea villosa, Decn. Nouv. Arch. du Mus. x, 147.

Cœlogyne cristata alba (hololeuca).—This rare albino is now in flower with us (a plant with seven spikes). It differs from the type simply in the absence of the yellow of the lip, thus rendering it the only instance, I believe, of an entirely pure white Orchid. Though very rare at present, it is like the type—such a free grower that it cannot fail to be plentiful before long.

Sarcochilus (Thrixspermum) Berkeleyi.—This charming little rarity belongs to the caulescent section of Orchids and in general appearance is not unlike a miniature *Erides*. The drooping spikes, which are about eight inches long, are thickly set with white flowers with but a dash of amethyst on the lip. The curious sac-like appendage, from which the genus takes its name, renders the flower very remarkable. This species grows well with us among the *Phalænopsis*, in a basket filled with crocks and sphagnum moss.

Bertolonia marmorata.—This is a charming little ornamental leaved plant belonging to the Melastoma family and is valuable for mixing with Ferns in the green-houses. The leaves are 5 to 8 inches long and half as broad, of a bright green beautifully streaked with pure white, while the under surface is of a rich purple. It luxuriates in a warm, moist atmosphere in a shady corner. A compost of loam, peat and leaf mould with a good sprinkling of sand in well drained pots suits it. When they lose their bottom leaves the plants should be taken out and repotted into small pots, sinking the stem as low as possible, so that the new leaves will cover the pot. Keep the plants comparatively dry until they get nicely rooted, after which they should never be allowed to become dry. It was introduced from Brazil in 1858.

Rondeletia (Rogieria) gratissima.—This Mexican shrub bears corymbose cymes of pinkish fragrant flowers. We find that it blooms during nine months of the year, and grows best in a cool green-house temperature, and in a mixture of two parts loam to one of peat. To encourage growth we plant it out in the open ground during the summer months.

Amaryllis Aulica.—A few large plants of this good old species are in bloom with us now while others are being retarded in the cold house. Most of the bulbs are bearing two spikes each and some of the pots contain 15 to 20 bulbs. This species is evergreen, and need not be repotted more than once in 3 to 4 years, but may be fed with liquid manure during active growth.

Phalænopsis Sanderiana.—Some plants of this grand species now in bloom here show a great variation both in the flower and in the leaf, scarcely two of them being alike. The most attractive kind has the flowers suffused with a delicate rose, which is much darker on the upper section of the flower. This kind is almost invariably found to have leaves marbled as in *P. Schilleriana*, while the pale varieties possess the green leaves of *P. amabilis*. Among the best of the paler kinds is that called *P. marmorata*, in which the lateral sepals are much spotted with purple. The lip also is beautifully stained and spotted with the same color. It has been suggested that this species is a natural hybrid between *P. Schilleriana* and *P. amabilis*, and the great inconstancy in the color of the flowers and leaves tends to strengthen this theory. Some of the plants when out of flower cannot be distinguished from *P. Schilleriana*, and others from those of *P. amabilis*. *P. Sanderiana* was introduced in 1883 from the East Indian Islands. It grows well with us in a warm, airy house, potted in cylinders or baskets which are nearly filled up with broken crocks, and with a thin layer of sandy peat on the top. Abundance of water should be given at root and overhead during the growing season. When at rest water should be given freely at root, but the atmosphere should be moderately dry. During this period a minimum temperature of 60°, with a rise of 10 to 20° according to the weather, will suit them.

Calanthes which have finished flowering should be kept dry, in a temperature of about 60°, until the new growths begin to emit roots, when they should be shaken out of the pots, the old roots nearly all trimmed off, and repotted in fresh soil, which may consist of two parts fibrous peat, one of loam and one of half-rotted leaves. Water should be given very sparingly until the plants are nicely rooted, after which they need plenty of water and strong heat, with an occasional syringe overhead. After the plants are pot-bound, weak liquid manure may be given them nearly every day.

Phalænopsis Harriettis.—This is one of the latest additions to this lovely genus, and was produced by the intercrossing of *P. amabilis* with *P. violacea*. It is the most handsome and striking of the whole genus. The habit of the plant, size and form of flowers form an intermediate character, but the spike is that of *P. violacea*, but more slender. The flowers are greenish-white, suffused and dotted with rich, rosy purple, which becomes more intense and is in bars near the base of sepals and petals. The lip is of a rich, velvety purple, with yellow at base. This is the second time only that this species has flowered, and with the increased strength of the plant, there has been a wonderful improvement in size and color of the flowers. This we have also found to be the case with the artificial hybrid *P. intermedia*, which is now far superior to any imported natural ones.

Kenwood, N. Y.

F. Goldring.

Freesias.—These are the best of all our winter-blooming bulbs; they are of the easiest possible cultivation, bloom abundantly, and the flowers are fragrant and beautiful and have a refined appearance, without any of the coarseness peculiar to the "Dutch" bulbs. The best of all is *F. refracta alba*; *F. Leichtlini* is also common in cultivation, together with hybrids between these species. "Dutch" bulbs if forced this year are almost worthless for further use; Freesias on the contrary improve and multiply year after year. Growers for market plant the bulbs thickly on benches, in about four inches deep of soil; private growers raise them in pots. By having them in pots we can have them in bloom in successional groups for some three months in winter. Any good rich soil—turfy loam and rotted manure—suits them very well. A dozen bulbs in an eight-inch pot will give capital flowers. Pot in August or September, and keep them cool but away from frost, and let them come along slowly. We can force them into bloom by introducing the most advanced plants into warm quarters. After they have done blooming keep them growing as long as the foliage keeps fresh and green; when it begins to fade dry off the plants and keep them dry till potting time next August. The finest Freesias I ever had were grown for two years in the same pots and without repotting. And this year in order to have as good next year, when the plants were coming into bloom I repotted them into larger pots, taking care not to break the ball of roots; this did not interfere with their blooming at all. They are also easily raised from seed. A few of the plants raised from seed sown this spring may bloom next winter, but the majority of them will not bloom till the following year.

Hydrangea rosea.—This is a comparatively recent introduction from Japan, and in flower and foliage distinct from the older *Hydrangeas* of our gardens. It is equally available for outside and inside work, and with a mulching in winter will live out-of-doors; if the bushes are killed down to the snow line, the shoots from the bottom will grow up in quantity and bloom in summer. This is not always the case with the common *Hydrangea*, for north of New York, if it be killed to the ground in winter, the young shoots from the bottom, although they grow large and vigorous enough, seldom bloom well, often not at all. *Hydrangea rosea* blooms some two to three weeks earlier than does the variety known as Thomas Hogg, and this is more marked when it is forced than when grown out-of-doors. Cuttings of the young wood strike with the greatest freedom. Although the proper color of the flowers is a pretty rose, they often assume a bluish tinge.

Chinese Primroses.—Sow at once if you wish for good plants for Christmas; plants for Easter may be sown in summer. Mixed seed as a rule is unsatisfactory; far better pay a little more and get exactly such colors as you want; the poor varieties require just as much room and care as do the fine varieties. *Alba magnifica*, white; *Meteor*, bright red; *Chelsea Rose*, pale rose; and *Chelsea Blue*, are most excellent varieties. There is a good deal of emphasis laid on fern-leaved varieties, but their flowers are no better than those of the rounder-leaved sorts; indeed there is not a pronounced difference between them. Chinese Primroses should be kept in active growth, moderately moist and slightly shaded all the time, and as cool as possible during the summer months. As the single varieties can be grown so easily from seed it is not worth while to save over any of them for another year. But as the double flowered sorts are uncertain from seed we should keep them over and propagate them from cuttings in the same way as is commonly done with the old Double White. W. F.

Trial Beds.

THIS is the season of catalogues. Every year they become more sumptuous and alluring with their long lists of novelties. Some are already illustrated horticultural magazines, and if the evolution continues we shall eventually have morocco-bound annuals distributed through the mails. The catalogue of to-day is a tribute to the growing taste for horticulture. The shrewd, experienced money-maker from the soil knows how to discount these large and much-embroidered promises of a renewed Garden of Eden. He turns straightway to the old standard, established sorts, and invests in these alone. His calculating eye is fixed on a crop that will pay beyond the shadow of a doubt. He is right, and so may you and I be right if we take a different course. That crop pays best which yields what we value most. There is a solid satisfaction in a fair return in dollars and cents from our land, and it is well to aim at this. The farming which makes milk cost as much as champagne, the vegetable garden which suggests to the natives only the color of the bank-notes expended, tend to confirm in many minds the idea that the methods of their grandfathers were the safest and wisest. But lavish, ignorant expenditure is a very different thing from a continuous course of experiments which need cost but comparatively little. For our own sakes, and especially for the sake of our children, we would seek to banish the hum-drum element from rural life. In no other pursuit have we such opportunity to do this as in horticulture. Let me give at once practical illustrations of what I mean. Here is a plot of ground. You can put it all in a crop which an ignorant laborer can take care of. You can also put the soil in fine order this spring, select from a catalogue a dozen or more of the most promising varieties of peas, say; plant them all at the same time and under the same conditions, the dwarf kinds by themselves, close together, those requiring the support of brush farther and farther apart, until you come to the unrivaled old Champion of England. Now you have a play-ground as well as a pea-patch for yourself and all the family. You will soon need a little recording note-book with a page allotted to every carefully labeled kind. The children will be glad to go with you often to see which sort first pushes through the soil and then to watch the race on through blossoming to maturity and the table. The entire family will discuss the comparative flavor and merits of the varieties, all kept on the *qui vive* over that pea-patch for several weeks. Bright-eyed boys will be almost as willing to work in it as to go fishing. The careful record kept from first to last will reveal which kinds are earliest, which the most productive and profitable to raise, and which the best flavored. May not such a crop be worth far more than one stolidly raised and stolidly sold or eaten? The outlay need be small indeed, but the return is that which makes life—zest and enjoyment.

Take another inexpensive yet more extended method of amusement and experiment. Select a strip of ground as long as you please and about fourteen feet wide. Enrich it well with manure from the cow-stable, if possible, but any fertilizer will answer, so that it be not too fresh and liable to ferment. Mix the fertilizer evenly to the depth of eighteen inches, and then set out as many varieties of strawberry plants as you can afford space for. Let the rows be two feet apart across the bed, and the plants one foot apart in the rows. By this course you will have a dozen plants of a kind in every short row. Label carefully, and begin your written record. Now you have a trial bed that will last three years at least. In May, the April-set plants will begin to blossom. Pick off the blows as fast as they appear. The small amount of fruit produced the first season is of no value, but a great injury to the young plants. Letting them bear is like working a colt. In June the young plants will begin to throw out runners and the tendency will increase till fall. Nature's law of propagation is working; but it is fruit, not plants, that you wish. Therefore cut off every runner as it appears—an easy task for children. Force every plant you set out to grow as large as it will on its original root. If plants die, merely permit sufficient runners to grow to fill their places. Since the plants are allowed neither to blossom, bear nor produce runners, there is only one thing they can do, and that is, to grow into great bushy stools and develop fruit buds for the ensuing year. By fall you may find that a peck measure will scarcely cover a plant. Of course the hoe should be kept busy throughout the season. But little hand-weeding will be required, because the plants have not been allowed to run and mat together. Clean, frequent culture is absolutely essential to the best results. As soon as the ground begins to freeze in the autumn cover the plants well, but not deeply, with light stable manure, leaves, litter of any kind not full of noxious seeds. Uncover after the alternate freezing and thawing of spring is

over, rake off the litter as soon as the ground is dry enough to work, then fork the soil lightly between the plants and return the litter as a mulch, adding enough more to cover the ground evenly. When I say, fork the ground lightly as soon as it is dry enough to work in early spring, I mean just what I say. I do not say, let a stupid or careless workman half dig the plants out when loosening the soil, nor do I suggest that this work can be done just as well late in spring after the plants begin to blossom. Many authorities declare the ground about bearing plants should not be disturbed in spring till after the crop has been produced. I have always found cultivation advantageous if performed when and in the way I have indicated, but not otherwise. If space permitted, I think I could support my opinion with good reasons. After this very early cultivation the plants are ready to bear. The mulch around them should be sufficient to keep the ground moist and the fruit clean.

Soon comes the exciting period, when the berries change from green to white and then begin to blush in the June sunshine. Careful notes should have been made all along as to the comparative vigor of varieties, hardiness, time of blossoming, character of blossoms, etc. Now the record should be full indeed as to size, productiveness, firmness of the berries, and, above all, as to flavor.

The differences in fully matured and ripened strawberries would astonish those who have always purchased their supplies in the market.

A strawberry bed, treated as I have described, is "a thing of beauty" and would be "a joy forever," if it could last. It does last three times as long as the ordinary matted bed of two or three varieties, and the fruit averages three times the size. We have had Crystal City strawberries in May, and Memphis Late and Triomphe de Gand berries after the 4th of July.

What a delight to visit the trial bed every day—see each variety developing after its own organic law! The entire family becomes a tasting committee, and the children learn from delicious experience the infinite opportunities afforded by horticulture to gratify higher tastes than those of the palate. The beautiful fruit, large and perfectly developed by high culture, pleases the eye as well; the variety in form and flavor, the different aspects of plants and foliage, suggest that similar tests may be applied to other fruits, to the whole range of flowers, vegetables and ornamental shrubbery. In brief, the reason becomes apparent why man was first put in a garden, for therein are found the varied interests which continue to our latest age as fresh and undying as Nature herself. In our large cities are multitudes of pallid, dissipated youth who might have been kept in breezy country homes if the stolid, plodding element had been eliminated. Those crops often pay best which nourish mind as well as body.

Cornwall-on-Hudson.

Edward P. Roe.

Foliage With Cut Flowers.

A careful study of the place and manner of growth and of the tone and character of the foliage of any plant will suggest the most effective arrangement for the cut flowers of that plant. To illustrate, the Gladiolus is always an aggressive and striking flower no matter how delicate it may be in shade. Its function seems to be to enliven by its bold display of color. Its foliage is a dull but strong green and is linear in form. Following this suggestion, we find it appears to best advantage when its spikes are arranged in a tall vase with a liberal use of the long leaves and stems of the various giant Grasses or Sorghums or even of Indian Corn. The forage plant called "Tiosinte" is particularly good for this purpose.

The common white garden Lily throws its cluster of dazzling white flowers well into the air, supported by an almost leafless stem, and we never have been able to arrange effectively any foliage with this flower. The white is so intense and yet so delicate that it needs no aid and is injured rather than helped by any other color. The only flower we have ever seen effectively arrayed with this is the Agapanthus. Its flowers are in their way as delicately beautiful as those of the Lily and blend well with them.

Nothing will bring out the beauty of blue Larkspurs like well matured Carrot leaves, and a comparison will show that in color and expression they are much like the natural foliage of the plant. In the same way clusters of wild or seedling Pear leaves form the most effective setting for the brighter colored Roses.

To extend these illustrations a little further, arrange a basket of Concord Grapes with Delaware foliage and one of Delaware with Concord foliage, and then another plate of each with its own leaves, and observe the more pleasing effect of the latter.

I have found a vase made as follows admirably adapted for the natural arrangement of such flowers as *Gladiolus*, and, in fact, for all strong growing kinds. Take a smooth and perfect length of common 6 or 8 in. stoneware sewer-pipe, paint it a pleasant neutral tint; have fitted into the smaller end a tin can some 8 inches deep and supported by a flange projecting over the top. Have a tinsmith make two circles of wire fitting easily into the can and have these circles filled with cross wires so as to make a net work of about an inch mesh. Solder to these circles—and in such a way that one of the circles is held about two inches from the bottom of the can and the other just below the top—two stout wires bent like the bail of a pail, and of such length that when the circles are in place the arch of the wires will be some 6 inches above the can and cross each other at right angles. The two circles and the upper wires will enable one to place a spike of *Gladiolus* or a spear of grass or any long stemmed plant so that it will retain just the place in the arrangement that may be desired, while by means of the wire handles the whole arrangement can be lifted out of the can to remove the water when necessary.

Detroit, Mich.

Will. W. Tracy.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—I was glad to see, in a recent number of your paper, that you had called attention to *Boronia megastigma*. The delicious fragrance of its flowers certainly entitles it to more general cultivation in our green-houses. But there is another plant, equally fragrant, which one seldom meets with nowadays—not nearly so often as thirty years ago. This is *Mahernia verticillata*, a half-shrubby or woody perennial, introduced from the Cape of Good Hope about 1820. In habit it is not so attractive as *Boronia*, growing in a rather straggling way. But its flowers are prettier—small, bright yellow bells, profusely produced and as sweet as Lilies-of-the-Valley; and it is also a much freer and more rapid grower and one of the easiest of all plants to propagate. In a cool green-house it will bloom throughout the winter and spring, and it is one of the very best of house-plants. I should think it would be an excellent plant for florists to grow for winter sale in pots—in flower for room-decoration—as it remains so long in blossom and its delicious odor will permeate a whole apartment. *Mahernia* may also be had to flower out-doors in summer, and when I was young it was commonly grown in vases and hanging-baskets, a purpose for which its habit renders it peculiarly suitable.

Elizabeth, N. J.

W. J. K.

[Our correspondent does not say too much in favor of this plant. It is not rare in old green-house collections in this country, and a writer in a recent issue of the *Gardener's Chronicle*, of London, lamenting that it has "long been lost to English gardens," states that good plants can be purchased in this city for 30 cents a piece.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—What Mr. Parkman said in No. 1 of GARDEN AND FOREST of the White Mountain forests as capable—with proper treatment—of furnishing a steady supply of timber, and of the serious injury to the business of summer resorts and to manufacturers if speculators should cut off these forests, is applicable to many other parts of New England. In Berkshire County, Mass., White Pine comes up readily and makes a strong growth, but is not cared for so as to make straight, first-class timber. In this town about a million feet of lumber are cut every year, and at least half of this is white pine. It is, however, only fit for box-boards and on the stump is worth some \$4.00 per 1,000. Meantime the population is steadily decreasing, deserted farm houses staring one in the face on every road. There is not enough profitable occupation for even the few who are left, and the most enterprising young men seek business elsewhere. Here and there, however, one sees a grove of thick-standing, tall and straight pine trees, proving that good and high-priced lumber (and much more of it per acre) can be grown whenever it is protected and a little pains taken to secure a thick stand. It would prove an instructive object-lesson if some one would take and sow Pine on one of these farms in with whatever hoop-pole stuff will thrive best. The first crop of poles should be cut close to the ground so as to promote sprouting (*vécepage*, as the French call it), and continuous harvests of them should be taken off the ground until the Pine begins to shade and crowd the hard wood. After that thinning will be all that is required, and the material yielded by it will pay for labor, interest and taxes. When the feasibility of

this is once demonstrated, there will no doubt be plenty of imitators, and the tide of population now ebbing so sadly will flow back toward these noble hills.

Otis, Mass.

S. W. Powell.

The Forest.

The Forest Vegetation of Northern Mexico.—I.

THE tourist, who, fresh from a ride through the densely wooded swamps of Arkansas or Louisiana, or from the Pine-covered heights of New Mexico, enters Old Mexico at Paso del Norte, and mounts by night from the valley of the Rio Grande to the central tablelands, where in a journey of a thousand miles towards the capital he sees apparently but naked plains and bare and serrated mountains (notice in Spanish the same word, *sierra*, for a mountain range as for a saw), would doubtless be surprised at my choice of a theme for these articles. Nevertheless I have something to say of forests and forest trees in that same region, but more concerning the forests covering the Cordilleras, which lie from one hundred to two hundred miles west of the central railroad.

The tablelands of central Mexico, mostly covered by the States of Chihuahua, Coahuila, Durango, Zacatecas and San Luis Potosi, are plains, lying at an elevation of 4,000 to 7,000 feet, interrupted at intervals of ten to twenty miles by broken ranges of mountains, whose summits are 2,000 to 3,000 feet above the surrounding plains, or 6,000 to 9,000 feet above sea level, and whose trend is south-east and north-west. In the State of Chihuahua these mountain-bearing plains ascend from the Valley of the Rio Grande on the north-east, less than 4,000 feet elevation,—in the State of Durango from the Laguna country on the east, a region of lakes which are river sinks, and less than 4,000 feet altitude—and culminate in the continental divide lying within but near the western bounds of these two States. Where the divide is a gently swelling plain, as immediately north of Cusihuiriachic, its altitude is about 7,000 feet; whenever it rises to a mountain crest it attains an elevation of 8,000 to 10,000 feet. It is doubtful whether along all the mountain line that stretches southward from the United States boundary a greater elevation than 10,000 feet is to be found, until we come to the snow peaks which look down upon the valley and city of Mexico.

To the west of this divide, parallel with it, but not always contiguous to it—for in some places the Pacific Slope begins with a broad, gently falling plain—lies the Cordilleras region of north Mexico, a belt seventy-five to one hundred and fifty miles wide, closely packed, forest-covered mountains; cut through everywhere by torrents in swift descent to the lowlands of Sonora and Sinaloa—torrents which have formed a labyrinth of gulches, cañons and barrancas, the terror of the traveler—rising higher towards the west only in the seeming, because there the valleys are deeper; in the upper or eastern portion of the belt narrow, habitable valleys at rare intervals only, but more frequent and broader valleys, as we descend towards the *Tierra Caliente*, showing villages, grain fields and Orange orchards. On the cool, evergreen heights of this western verge of the plateau is condensed the moisture borne inland by the winds of the Pacific. So a good measure of rain and snow usually falls here during winter; while from July till August thunderstorms are of daily occurrence. The storms of winter being almost wholly lost among these mountains, the interior, however, is left comparatively rainless from October to August; for, so slow is the eastward progress of the summer rains, preparing their course step by step over successive mountain chains and heated plains, that it may be as late as August ere they descend to the valley of the Conchos, and meet in its vicinity the rains from the Gulf of Mexico, also retarded in their inland march by the similar barrier presented by the Sierra Madre of eastern Coahuila and San Luis Potosi.

But it is not due to dearth of water alone that the interior plateau remains comparatively bare of forest growths. The explorer everywhere observes in that region a paucity of soil, because, chiefly, it has never had the benefit of glacial action to grind down the rugged mountains and strew the resulting earth over the land in deep and fertile drift formations. Moreover, the action of frost to disintegrate rocks, and bring down the toppling crags, is there exceedingly slow, since water to aid in its operations is generally withheld in winter. So the mountains do not possess sufficient depth of soil to carry through eight to ten months of drought the water supply necessary to the life of a forest. By May, in fact, whoever travels them incurs risk of perishing by thirst from inability to find a living brook or spring. Therefore the trees of all the interior ranges are thinly scattered and of stunted growth. In the

extreme drought of last April I saw them putting forth new leaves but feebly and shedding their flowers without ability to set fruit. Only in the cañons, where they may be somewhat protected from the fierce heats by overhanging cliffs, and where deposits of soil may lie, can they attain full size, or can the species with broad, thin leaves exist.

Not less are the plains unfavorable to tree growth. In a former age of the world they were covered with inland seas. Some of these broke through their mountain dykes and emptied themselves into the Gulfs of Mexico and California; the others have nearly dried up under the sub-tropic sun. Except in their lower basins, there was deposited on their gravelly bottoms but a comparatively thin layer of fine earth; and as a peculiar feature of common occurrence, before this thin deposit was laid, the gravel was cemented together by an aqueous deposit of lime washed down from neighboring hills. The dry slopes and mesas resulting from this now bear of ligneous vegetation only a few peculiar shrubs, which may be described hereafter.

C. G. Pringle.

The Forests of Tunis.

THE following interesting account of the forests of Tunis, recently issued from the British Foreign Office as a Consular Report, is reprinted from the *Gardener's Chronicle* of London.

"The forests of Tunis, which cover an appreciable part of the surface of the country, were, until the French occupation, subject to no supervision, and suffered from the want of that supervision. In 1883 the French, alive to the importance of preserving what remained of these forests, which are the property of the State, placed them under the management of a separate department, which has explored their extent and demonstrated that they are an important element of national wealth.

"The explorations have resulted in the division of the forests into two main groups; one consisting of the Cork tree and deciduous Oak, locally known as 'Zen,' covering the north-western angle of Tunis, where it abuts on the Algerian frontier and the sea, and separated from the rest of Tunis by the river Mejerdah. These trees grow in a stratum of sandstone, which again reposes on the upper chalk, and they completely disappear where the latter stratum crops to the surface. They cover an area of about 360,000 acres, on 330,000 of which flourishes the Cork tree, and on 30,000 the 'Zen.' It is found that the former invariably grows on the southern slopes of this mountainous region; and, on the northern slopes and in the hollows of valleys, the latter.

"South of the River Mejerdah both these trees disappear, and give place to the Pine and a species of evergreen Oak. They are scattered in groups over various mountainous regions of no great elevation, all comprised in the northern half of the Regency, where alone the rainfall is sufficient to sustain their growth. It is calculated that these several forest groups cover a surface about equal to that covered by the Cork trees and 'Zen,' viz., 360,000 acres.

"These latter groups are in a more neglected state than the former. For the most part they are nearer to important towns than the Cork forests, and from time immemorial have supplied those towns with fuel. The bark of the Pine is also used for tanning and coloring hides and skins; and as no control is exercised over the cutting down of the trees, or stripping them of their bark, and goats are allowed to roam everywhere, the forests are rapidly deteriorating. No legislation has as yet been adopted for putting a stop to this waste, and though the Department of Woods and Forests proposes that the chiefs of the contiguous villages and tribes should be held responsible for the depredations, the Government has not yet ventured on this high-handed measure.

"It is to the Cork forests that the attention of the new administration has been mainly directed. They are situated in a country with a very sparse population, dwelling in huts formed of the branches of trees. Their number is estimated at 18,000 souls, or only one individual to 30 acres. It was open to the French administration to adopt one of the three following systems in dealing with the woods and forests, viz., their sale, their concession for fixed periods, or their management by the State. The last was chosen as the system best adapted for their preservation and extension, particularly as it was held to be of paramount importance to favor the increase of rainfall in the country, the quantity of which is supposed to be intimately connected with the extent of the forests. That they were more extensive in the time of the Romans, and that they conduced to augment the annual rainfall, may be inferred from the discovery of numerous aqueducts among hills which are now absolutely denuded of trees and destitute of springs.

"Much has been done during recent years in improving the condition of these Cork forests. Roads have been cut through them, and at stated intervals spacious alleys have been frayed to serve as a means for arresting the march of the fires which frequently ravage them. Above all, much progress has been made in barking the Cork trees, an operation which consists in stripping the rough bark off the trunks of the trees to the height of 5 or 6 feet from the ground. This virgin bark is without value, and only ten years after the trees have been robbed of it, is the inner bark available for commercial purposes, the trees giving a crop of Cork every ten years. To meet the expenses incurred in these operations there were available the sums accruing from the sale of the trees already felled, and of the bark of the 'Zen' for tanning. Little has been done towards working the less valuable forests to the south of that river. An experiment has been made in planting with trees a small tract of mountain land near Hammam-el-Enf, some ten miles to the east of the town of Tunis. The operation consists in digging holes at short distances, and in dropping in each a few seeds of the Pine tree. Several hundred acres have thus been planted with tolerable success, at an expense of £4 10s. an acre.

"The worst enemies of the forests are goats. Some French colonists have taken steps to exclude these animals from their estates, and the result has been that shrubs, which never attained the height of more than two or three feet, have in four or five years assumed the dimensions of trees. This is particularly apparent in the large domain of Enfida, where a *Thuja*, which covers much of that region, from a dwarf shrub has now, within the space of six years, attained a height of twenty to twenty-five feet. The French railway company, which owns the line running from Tunis to the Algerian frontier, has succeeded in planting a considerable number of the *Eucalyptus resinifera* (the Red Gum tree), and *Acacia cyanophylla*. It is estimated that 300,000 trees have been planted along the line of railway.

"The cost of planting an acre with the *Eucalyptus* amounts to £20, about 1,600 trees going to the acre of nursery ground. After planting out, it is probable that at the end of twenty years 600 trees will have survived, worth 8s. apiece.

"The bark of the *Acacia cyanophylla* is rich in tannin, and valuable for the tanner. In the whole of southern Tunis there exists but a single forest, formed of a species of *Acacia*. It is situated about twenty-five miles inland from Ifax, and covers an area five miles long by a little over a mile in width. This forest, which was formerly much more extensive, is protected from the northerly winds by high land, and the trees grow in clumps in depressions of alluvial soil. Though they only attain a height of ten feet, the trunks furnish planks eight or ten inches wide, of an exceedingly hard grain, and capable of taking a fine polish."

Answers to Correspondents.

"Why is it not the best forest policy to cut out the mature wood from a primeval forest and let the rest grow?"

A. J. K.

If the questioner had asked: Is it proper forest policy to utilize the timber for which there is a market and to provide at the same time for a new growth? he would have exactly stated the very end and aim of forestry, and we would have assented without qualification. But whether the best method to attain this end, especially the latter part, is presented in the prescription contained in the above question, must depend on a special diagnosis. The method of taking only what is called "the mature or ripe wood" (who knows what that is?) or, as it may be called, the "method of selection," is at least an attempt at forest management, and the beginning of order and system, and where, as with us, forestry is as yet undeveloped, this method is decidedly better for the future of the forest, than indiscriminate slashing and clearing. It is, however, not the best, and in many cases a bad method of forest management, unless practiced with great circumspection. Its advantages lie in the preservation of a protective forest cover, and in the continuance of a natural forest in an advanced stage of development, the value of which must increase with the necessarily decreasing supplies of mature timber. But this depends somewhat on what "the rest" is. We can conceive of a natural growth, in which "the rest" is composed largely of inferior or undesirable growth, when it would be better policy to cut out the inferior growth first, work for a reseeded from the old growth, and then remove the old timber gradually, to have resulting a desirable young growth. When "the rest" consists of well-grown shade-enduring timber, like the Spruce in the forests of

Maine, where, after the removal of the old timber, the remaining growth has sufficient vitality to be benefited by the increased light influence, this method may be even recommended, at least for some time to come.

But, looking further into the future, this policy will ultimately not prove the best, as it is bound, by and during the frequent removals of older growth, to damage the young growth, which at the same time gets but little chance for development under the continued shade of the older growth, and gradually the valuable forest "runs out."

It is, however, possible to conceive of this method of selection under given circumstances and when skilfully manipulated with regard to the needs of an aftergrowth as good forest policy, and on the mountain slopes, where the preservation of a forest cover rather than the production of the most valuable timber is the object, it is decidedly the best policy.

B. E. Fernow.

Recent Publications.

A Catalogue of Niagara Plants, by David F. Day.

To the Report of the Commissioners of the State Reservation at Niagara, recently presented to the Legislature of this State, Mr. David F. Day, of Buffalo, has joined a catalogue of the plants found growing spontaneously upon the Reservation and in its immediate vicinity. In a very interesting introduction to this carefully prepared work it appears that it is based upon observations made in the neighborhood of the Falls during a period of twenty years. Probably, therefore, the catalogue is nearly complete, although Mr. Day modestly states that he may have overlooked a few species of Grasses, Sedges and other difficult plants. In the prosecution of his task the author has consulted, as far as possible, the observations made in this neighborhood by other botanists. The references to the botany of Niagara Falls, especially by the earlier explorers, are few. It is possible that Peter Kalm, the pupil and correspondent of Linnæus, may have left some record of his observations made at Niagara in 1750, although no mention can be found of their publication, either in the Swedish original or in translations. If Kalm's journal still exists its publication would be a welcome addition to the literature of American botany. It is probable that he discovered the *Hypericum* and the *Lobelia* which bear his name near Table Rock. There is no evidence that either Michaux or his son ever visited Niagara, and it is certain that Pursh came no nearer to it than the site of Elmira. Nuttall, who botanized near the Falls before 1818, mentions but one plant found by him there—*Utricularia cornuta*. Torrey was probably familiar with this region, although in his "Flora of the State of New York," published in 1843, he mentions as peculiar to Niagara, but wholly upon other authority, only 15 out of the 1,511 plants which he describes. The labors of later botanists, however, have been more useful to Mr. Day in the preparation of his catalogue. The journals of Judge Clinton, prepared while he was engaged in studying the botany of Buffalo and its vicinity, proved of the greatest value, as did the "Flora Canadienne" of the Abbé Purvancher and Macoun's "Catalogue of Canadian Plants."

The Flora of Goat Island shows few plants that are uncommon in western New York. Still, the island is rich in the number of its species. Perhaps no tract of its size in that vicinity can exhibit so large a number. Its vernal beauty is attributable not merely to this variety of plants, but also to the great abundance in which they are produced. It is probable, moreover, that the island formerly contained other species which are now extinct, such as several Orchids and Lilies. The Harebell has disappeared within a comparatively short time, and the Grass-of-Parnassus is fast going—the result of reckless flower-picking. The same fate awaits the Blood-root, the Dutchman's Breeches, the Wake-Robin and other charming wild flowers, unless the Commissioners succeed in putting a stop to this wholesale spoliation. They should endeavor, too, to restore those plants which have been exterminated from the island—an undertaking neither difficult nor expensive.

The value of this catalogue is increased by the references it contains to many rare and interesting plants found near the Reservation, although not within its borders. Of the 908 species of plants named in the catalogue 757 are native and 151 are foreign.

The *Revue des Deux Mondes*—March 1st, 1888—contains an article on "The Composition of Forests"—by the distinguished palæontologist the Marquis of Saporta, which sets forth how the present constitution of the forests of various parts of Europe is explained by the changes of climate which have taken place in successive geologic periods, and is illustrated by the fossil record.

Flower Market.

NEW YORK, March 30th.

Trade has been fairly good this week to supply numerous Church orders for Holy Thursday and considerable elaborate funeral work. The long period of dark weather will interfere with Easter bloom to a certain extent. As is usual at this time, white flowers are being held back for use on Sunday. As far as possible florists are resolved not to alter prices for Easter. There is a gorgeous display in the floral shops of plants, but it will not be as large as that of last year. Prominent dealers make grand exhibitions of Orchids, arranged in banks, where choice varieties of Vandas, Epidendrums, Cattleyas, Oncidiums and Cypripediums are offered for sale by the plant or spray.

Selected Hybrid Roses have risen to \$1 each. A limited number of Her Majesty Rose are brought in, and bring \$1.50 each. Tea and Hybrid Tea Roses remain as quoted last week. Plants of *Lilium Harrisii* cost from \$1 to \$2, and single flowers from 35 to 50 cts. each, according to the location. Plants of Calla with one flower and bud bring \$1. Cut Callas cost 25 and 30 cts., White Ascension Lilies are 15 cts. each. A few Gladiolus (Shakespeare) are offered and sell from 50 to 75 cts. a spike. Lily-of-the-Valley of the best growth costs \$1 a dozen; inferior flowers bring 75 cts. a dozen. *Spiraea Japonica* costs \$1 a dozen spikes. Plants of the same of medium size cost \$1. French Marguerites are 35 cts. a dozen flowers, or \$3 for 100. Large plants well flecked with bloom sell for \$2.50. Boxes of cut flowers for gifts are more in demand than designs. Novelty for these boxes are Stephanotis and Orange Flowers. These sell for 50 cts. a spray. Spikes of *Vanda Suavis tricolor* sell for from \$3 to \$5. There are from six to eight flowers on them. An Azalea (Artevelde) six feet high brought \$10; a plant of Genesta seven feet high \$20. Hydrangeas are exquisitely tinted and sell for from \$2 to \$5 a plant. French Marguerite Flowers are of an unusually large size.

PHILADELPHIA, March 30th.

Owing to the approach of Easter, flowers are plentiful, Carnations amongst staple articles being the most scarce. Grace Wilder, a delicate pink, is still the favorite, and with more sunlight and heat is improving in quality. Buttercup, yellow, with red stripes, comes next in favor. Whites will be most in demand at Easter. Swayne and Lamborn are amongst the best new sorts. Hinzie's White is also good; it brings from 35 to 50 cts. per dozen. Tulips are frequently delivered at the stores growing in shallow boxes; they make a gorgeous display. Cottage Maid, rosy pink, shaded with white Duchess de Parma, bronze-red, edged with yellow, Kaiser's Kroon, similar in color, but lighter, and the red and yellow more clearly defined, are all favorites, as are also the yellows, Chrysolora and Yellow Prince. Whites and solid reds are in demand too. They sell at from 75 cts. to \$1.25 per dozen. Violets are not so good in quality as they were; some of the single ones are poor, and sell at from \$1 to \$1.50 per 100, according to the quality and variety. Single varieties, when good in quality, are favorites here. *Asparagus tenuissimus* will be more used for Easter decorations than formerly. This is brought about through the scarcity of Smilax; it sells at from 50 to 75 cts. per string. *A. plumosus* is not at all plentiful. It is preferred to *A. tenuissimus* when obtainable at the higher price. Roses—Magna Charta, Captain Christy, Madame Luizet, Baroness Rothschild, Mrs. John Laing and Jacqueminots, amongst Hybrid Remontants—are plentiful, and sell at from \$3 to \$8 per dozen, according to location, variety and quality. Puritans, with the advancing season, continue to improve. Catherine Mermets are not a good color. Bennetts are fine when fresh, but their disagreeable tendency to become blue with age renders them less valuable than they were early in the season, especially since Jacqueminots have become so abundant.

BOSTON, March 30th.

The flower stores are gorgeous with Easter plants and flowers. The use of plants in churches has become almost as general as the use of cut flowers. For this purpose are offered a variety of showy, flowering plants, among which the Harrisii and "Longiflorum" Lilies must be given first place. Fine pots of these bring from \$2.00 to \$5.00 each, according to the number of blooms. Quite as showy as the Lilies, and more durable, are the Hydrangeas. The variety most generally seen is that known as *H. Otaksa*. Plants are offered in all sizes, from \$1.50 to \$5.00 each. Spiræas and Cinerarias are also to be had in profusion, and are worth from \$1.00 to \$1.50 per pot. Cut Lilies and Callas bring \$6.00 per dozen. The old-fashioned White Lilies bring from \$2.00 to \$3.00 per dozen flowers on stalks. Cool weather has been favorable for the Rose crop. The quality of Roses to be had for Easter in this market has never been better. Magnificent Hybrids are offered at \$12.00 per dozen. The best Mermets, La France and Jacqueminots bring from \$4.00 to \$6.00 per dozen. Lilies-of-the-Valley, Tulips and Daffodils continue at \$1.00 per dozen. Carnations have advanced in price, and good, long-stemmed fancy varieties bring \$1.00 per dozen readily. Immense quantities of Violets and Pansies are always used for Easter; \$1.50 per hundred is the price quoted. Smilax is very scarce at 50 cts. per yard. The new climbing Asparagus, which is more beautiful and lasts longer than Smilax, is largely used as a substitute.

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Arbor Day.

THIS festival, which originated about a dozen years ago in Nebraska, seems already to have won an established place among American holidays, and some thirty of the States will observe the custom this spring. The very existence of such a celebration is proof of an awakened interest in tree planting; and that it has been made to a certain degree a public-school holiday is encouraging, because this indicates the direction in which such exercises may be made to have a genuine value.

Roadside tree planting is not forestry, nor can it in any way serve the purpose of forest planting or of forest protection. It may be worth while, too, to suggest to some enthusiasts that planting rows of trees by every roadside is not commendable, and that planting the wrong kind of trees in any position, or planting suitable kinds badly, invariably means disappointment and loss. The failure of many plantations along the railroads of some western States, owing to improper selection and worse care, has wrought injury far beyond the mere loss to the companies. It has discouraged others and engendered a belief that all attempts in this direction are hopeless. Nor will the attractive exercises of Arbor Day serve any effective purpose unless the trees are intelligently selected and planted. Distorted and sickly growth or early death of the trees will follow to the disheartenment of all who planted them so joyously and hopefully.

As a people, Americans are not over sentimental. But this sudden awakening to the peril that threatens our forests, may lead to the error of esteeming it something like a crime to lift up an axe against any tree. Mr. Gladstone has said that the greatest obstacle to a sound forest policy in Great Britain was the superstition that invested trees with a certain sacredness, so that felling one was looked upon as sacrilege. We occasionally observe the same feeling manifested here by worthy people who, in their new-born zeal, are led to speak of all lumbermen as enemies of the human race. Of course there can be no system of forestry without tree-cutting, and the protest, to

have any value, should be made against wasteful cutting or the stripping of mountains, where the trees serve a higher purpose as a protection to the water courses than they can when made into lumber. It often happens, too, that to secure the highest landscape beauty, trees that are improperly placed need to be removed, and every one who has had charge of public parks has been rebuked for vandalism when it was necessary to sacrifice a tree or a group of trees.

Now, the antidote to any extravagance of this sort is a knowledge of trees and their uses; and the hopeful feature in this Arbor Day celebration is that which makes it essentially a school holiday and connects it with the educational system of the State. It will serve no worthy purpose when the Governor of a great State, as a part of the solemnities, plants White Pines to struggle with the smoke and dust of a city square. But if it can be made an object lesson to the young, as the crowning ceremony of a course of instruction on trees and their needs and uses, it may become an educating influence of serious value. Beyond question, the children of our public schools are entitled to some elementary teaching in regard to the abundant tree growth all about them. It is a scandal that they should grow up in ignorance of the very names of the trees they see every day, and that they should know nothing of their uses or of the laws that control their development. Ability to give instruction in this direction should be required as part of the equipment of every teacher. And if, in addition to the instruction received, the children are led to plant trees with some holiday ceremony, they will be likely to watch their growth with a personal interest and note what helps or hinders it. The beautiful custom of planting memorial trees is one against which even the man who delights to style himself "practical," can offer no objection; and if a child is induced to give closer observation to a tree because it is called by his name, the gain is substantial; for the cultivation of habits of observation and comparison is of itself an education.

Arbor Day will exert a beneficent influence if it does anything to hasten the time when even the children can give an intelligent reason for choosing a particular tree for a given place or purpose, and when they know how to plant it properly, and to give it the care it needs thereafter.

A Dangerous Measure.

A BILL authorizing the Forest Commissioners of this State to lease portions of the forest preserve, not exceeding five acres in extent, and for periods not exceeding five years in length, has already passed the Assembly and awaits the action of the Senate. This bill emanates from the Commissioners, whose duty it is to protect and preserve the State forests, and they recommend and urge its passage. It is a measure fraught with danger to the Adirondack forests, and it ought to be defeated.

The history of this bill, and the reasons which have induced the Commissioners to recommend this remarkable policy, are, as we understand them, briefly these: A large number of persons have, at different times, entered upon the State domain, within what is now the forest preserve, and, without legal authority, have built for themselves summer homes on the land thus occupied. Many of the most beautiful islands in Lake George, and some of the most desirable sites on the Adirondack lakes, are now held in this way by squatters. Among them are men of wealth, and men of social and political influence. These facts make the position of the Commissioners a delicate and difficult one. If they allow the squatters to remain, they lay themselves open to serious charges of malfeasance in the execution of a public trust; if they take steps to have them removed from the State lands they create personal hostility against themselves. They hope, however, by obtaining authority to lease portions of the forest, to legalize this unlawful occupation of State lands, and at the same time

to put themselves in a position to be able to supply eligible building lots for summer homes at low rates.

This should not be allowed. The bill is too general and sweeping in its provisions. It gives too much power to the Commission, and throws too much temptation in their path. The policy of forest management, which its passage would inaugurate, is, we are convinced, a dangerous one. The only reason that justifies the State of New York in holding lands in the Adirondack region, is that the forests which grow upon them may be properly protected and preserved. These forests have an important and controlling influence upon the prosperity of the whole State. If they are to be parceled off into five-acre building lots it will be impossible to carry out any scheme of forest management. Settlers, even when they are rich, and possess social and political influence, are a constant menace to the forest. They increase the danger of fire; they stamp out or clear up the undergrowth, even when they do not destroy or injure the trees, and they are, when they become numerous, a powerful incentive to railroad building.

If a wealthy citizen of this town should ask the privilege of building a summer-home for himself in the Central Park, the proposition would be considered monstrous. The proposition to use the Adirondack forest-park in a similar manner only differs in degree; it is equally monstrous, and might become far more dangerous. There are now comparatively few settlers in the Adirondack forests, but the number is increasing every year, and if the authority to lease land is given to the Commissioners, sooner or later every lake will be lined with settlements and every available site in the forest will have a cottage on it. All the wild and rural charm of the woods will be destroyed, their usefulness as a great popular sanitarium will come to an end, and it will be merely a question of time, when the State forests must be destroyed, or lose their essential value.

There is still territory enough in the Adirondack woods, outside of the State preserve, for a large population, and no hardship will be inflicted in shutting up the public lands from settlement, except in the case of persons who have made expensive improvements on land to which they never had a title, and which now they should be compelled to vacate.

The Commission has doubtless been led to advocate this measure through ignorance of the dangers which its adoption would entail in the end upon the forests. It is not to be believed that they have done so in full knowledge of what a forest really is, and of the requirements of even the crudest system of forest preservation. They have now, however, an opportunity to show their zeal and public spirit. The Adirondack forests are about to be cut up and seriously injured by the building of numerous railroads. The forests, or at least those portions of them which belong to the State, can still be saved from this new danger by a vigorous effort to secure restraining legislation. It is the duty of the Commission to make this effort; its members will find themselves supported in it by public applause and the assistance of the people of this State.

Street Trees.

IN no branch of rural economy, perhaps, are Americans so far behind the people of almost every country of Europe, as in the selection, planting and care of street and road-side trees; and this is particularly true in the case of the plantations made in most of our larger cities and their suburbs.

Two mistakes are almost invariably made in undertakings of this character in the United States; the work is done too cheaply, and the trees are badly selected with reference to future effect. Saplings dug from the woods with mutilated roots and branches, are planted in shallow soil, and are then left to struggle unaided against the enemies which beset urban and suburban trees—

drought and dust and starvation, gnawing horses and ravaging insects. In the case, for example, of a great public improvement now in progress near one of the principal cities of the United States—an improvement which is dependent entirely upon a growth of stately shade-trees for its value and to which its promoters are fond of alluding as “an American *Champs Elysées*”—it has been seriously proposed to plant trees dragged from a neighboring swamp in strips of earth four feet wide and only one foot deep, resting on a bed of porous gravel. It is needless to say that trees planted in this way could never do more than drag out a brief and miserable existence.

There is no poorer economy than trying to plant street trees cheaply. Unless the work can be done well it had better not be done at all. The ground should be thoroughly prepared, and well-selected nursery-grown trees, carefully pruned for the purpose, should alone be used. The American habit of taking saplings from the woods, cutting off all their branches and half their stem, and then using them as street-trees, cannot be too strongly condemned. The result of such treatment is this. A fork is formed by two or more horizontal branches pushing up from the top of the cut stem. Water gathers and stands in this fork, and gradually carries decay down into the trunk of the tree, destroying it long before it reaches maturity.

Street trees not only should be carefully selected and thoroughly planted, but if anything like a satisfactory result is expected, should be protected from gnawing animals, and judiciously pruned as often as pruning is necessary to keep them in proper shape. The mistake of too close planting is almost invariably made in this country, and trees planted thickly for immediate effect are rarely thinned in time to prevent their injury by overcrowding.

In the matter of selection we make as many mistakes, and almost as serious ones, as in our methods of planting. It is a well established rule, based upon common sense, that trees of one variety only should be planted on one continuous street or avenue. The reason is obvious. If trees of different varieties are used, that uniformity essential in urban planting to the production of harmony of effect will be lost. Trees of different varieties grow differently. Some grow more rapidly than others; some come into leaf and some lose their foliage earlier than others; some, as they approach maturity, assume a stately, and others a graceful aspect; and variety which may make a country road-side beautiful, is entirely out of place in connection with the formal lines of city buildings. This rule is rarely observed in the United States. Trees of one variety are rarely planted here in continuous lines. The pendulous American Elm alternates with the rigid-branched Sugar Maple, or a heavy Horse-Chestnut is seen between two sprawling Silver Maples.

Such combinations of trees are incongruous when planted and age only makes them worse. Roads here and there in New England planted exclusively with the Sugar Maple or with the Elm, or in some of the far Southern States with the Water Oak, serve to show how much more beautiful and effective a street plantation can be made by using one variety of tree, than by any possible combination of different varieties. Or, to cross the Atlantic for examples, the continuous avenues of Planes, of Lindens and of Horse-Chestnuts in Northern Europe, of Sophoras in Italy and of Ailanthus in Paris, clearly teach the same lesson.

Now is the time when plant-orders from all quarters and from all sorts of people are pouring in upon nurserymen. Many of these lists display an ignorance of the first principles of good planting which distresses the expert nurseryman, and the lack of assurance that the plants of even the better lists will be arranged to advantage often troubles his mind still more. For he knows that trees and shrubs, however well chosen, may yet be so unadvisedly planted as to produce no harmonious effect; that they may easily be placed so as never to really satisfy the hopes of their planter,

and never be any credit to their grower, the nurseryman. The owner of a suburban lot or of a country-seat reads the descriptions in a catalogue and writes an order, perhaps for several hundred dollars' worth of plants. Some day the stock arrives, and the owner and his gardener, or perhaps a "landscape gardener" from the nursery, proceed forthwith to planting. The result may be seen in the suburbs of every city and in many country estates. Everywhere are nursery novelties indiscriminately scattered among native wood and shrubbery, or dotted as single specimens all over the lawns. Even as specimens the plants are seldom arranged with good effect. The whole method of procedure is wrong. The fault is not the gardener's, for the most accomplished artist could render small service, if he were called on only after the plants had been delivered on the ground.

The designing of plantations, large or small, calls for the best skill of the real landscape gardener. They should be made to harmonize with the existing natural features of the ground; they should not destroy, but should, if possible, emphasize its natural character. Even for suburban lots, their proper planning requires much knowledge of the nature of plants, much imagination, and much careful preliminary study upon paper. It is safe to say that the nurseryman who secures many orders from professional landscape gardeners, or who persuades his customers to make or get planting-plans in advance, will possess a more comfortable mind and conscience, and will find himself far better advertised by his plants, than his rivals.

Senator Vest's bill providing, among other things, for the extension of the boundaries of Yellowstone Park towards the south and east, is one which should be promptly passed. The enlargement will include the western slope of the Absaroka Range, with the timber land at the sources of the mountain streams flowing into the park, as well as those which flow eastward into the Big Horn. This proposed addition to the park is so rugged in surface that it can never be subdued to agricultural use, and from its geological formation it is safe to pronounce it utterly barren of mineral wealth. But as a part of this great natural reservoir where waters are stored to find their way to both oceans, the forest here is of incalculable value. Not only will these coniferous woods restrain the melting snows of winter, but here, unlike most of the Rocky Mountain region, are summer rains to be husbanded as well. Many of the streams which receive part of their supply from this region can be used for purposes of irrigation, and upon this will depend the success or failure of agriculture for thousands of square miles. This is only one of many areas along the Rocky Mountains which should be set apart as forest-land forever, but from its connection with the Park it is a promising place to begin. There should be little difficulty in passing Senator Vest's bill.

It does not seem as though taste in the arrangement of flowers was at a very high level in this country, when we read the following paragraph, descriptive of a construction that was exhibited in a Western city not long ago: "Upon an easel of Cat-tails a velvet plaque rested. The latter was decorated with a cluster of Roses, and at one side, resting upon a branch of Holly, was a little owl made of Violets and natural enough looking to fly away. Beneath was a nest full of eggs." But reading it quoted with approval under the heading, "Another Pretty Thing," in a late number of a prominent English horticultural journal, we are somewhat consoled by the thought that if our taste is bad, it is no worse than that of the rest of the world.

It is proposed by French horticulturalists to erect a monument over the grave of Lacharme, the famous cultivator of Roses. The Viennese *Illustrierte Garten Zeitung* suggests that lovers of Roses in other countries should contribute towards the monument, and names M. Bernaix, 63 Cours Lafayette, at Villeurbanne-Lyon, in France, as the person to whom remittances may be made.

Landscape Gardening.—VII.

IF, as I have said, we look at any American town where homes of the better class are isolated in their own grounds, we must confess that they do not prove us as far advanced in the art of gardening as we are in certain other arts. Few villa-lots in any neighborhood show that the first requisite of a good effect has been considered—composition. Little regard is usually paid to the harmonious arrangement of contrasting forms, and still less, I may now add, to the harmonious arrangement of contrasting colors.

I do not propose to discuss the intrinsic excellence of that popular kind of gardening which is known as "bedding out," as "ribbon" or "pattern gardening." There are many who would almost invariably prefer to it some more natural disposition of bright-flowered or bright-leaved plants—something more like nature's own floral arrangements or like those of our grandmothers' days. But, given the fact that solid, bright-hued pattern beds may be intrinsically beautiful, how often do we see them used in a way which suggests the desire to make them part and parcel of a beautiful general scheme, and how often is that nice feeling for color which we are so fond of exercising inside our homes displayed in choosing and assorting the plants which compose them? The beds we most often see are ugly in shape, garish in their contrasts of tint, and disposed without due regard to anything around them. A man who would not for worlds hang a chromo on his carefully tinted parlor wall, contentedly puts chromos in Coleus and Geranium in the middle of a lawn the strong green tone of which throws their gaudiness into high relief.

If, now, we look at our larger country-seats and parks we find more palpable evidence of good taste. We have some admirable landscape gardeners in America, and, naturally, they are more often asked to manage large problems than small ones. But as yet they are not asked nearly often enough; and even when asked their counsels are not always respected. They may be allowed to lay out the grounds as they wish, but when once their backs are turned, how quick is the owner to retouch—and spoil—their work! How seldom does he ask himself what it was that his landscape gardener really wanted to do—what was the general effect he wanted to produce,—and then address himself to developing and preserving it! How seldom do we see any place, great or small, of which we can say, There is everything here that the eye desires—there is nothing that it could wish away! How surprised would almost any proprietor be, did we venture to criticise the view from his window upon the same principles that we should apply to a painting on his walls; and yet, unless it will stand such criticism, it is not what he has wished to make it.

Of course, only an experienced and capable artist can arrange any extensive gardening scheme with success. And even the smallest scheme is likely to be more successfully planned and more rapidly perfected under an artist's eye. Yet even if his help is unattainable there is no reason why we should resignedly fall back upon haphazard ways of working. Any man can try to work in an artistic spirit, even if he cannot rival an artist's skill in execution. That is to say, no result made up of various elements—even if those elements be the very fewest in number—can be good which is not good as a whole; to make it good as a whole we must begin by having a clear idea of what sort of a whole we want; and to begin with such an idea is to work in an artistic spirit, no matter how well or poorly we succeed in giving it beautiful expression. The scheme is the main point—the scheme and the will to stick to it and not be tempted by the beauty of individual things into frittering away or confusing its effect.

Is it needful to say that working in this spirit we should not only work to better eventual effect, but with greater pleasure at the moment? To have some appropriate and charming little picture in our minds which we want to realize; to dispose our ground, and to choose and place our plants, with the requirements of this picture before us—

this is to get the highest degree of pleasure from our planting. Nor can it be objected that when the picture is once arranged, then our work and pleasure are over, unless it can be perpetually tampered with and disarranged. To the artist the mutability of nature is often a heavy cross, since he knows that when his result is considered finished he must leave it to others who will permit it (even if they do not aid it) to transform itself into something very different. But to the proprietor or gardener who is trying on a modest scale to emulate the artist, this very mutability insures the permanence of his pleasure. Day by day and year by year he can watch the development of his picture, guard against Nature's disfiguring retouches, welcome her happy accidents, and carefully correct and retouch his result himself while preserving its general integrity. And this work will surely be pleasant, for to the scientific satisfaction of the cultivator will be added that purest of all delights—the consciousness of being a creator in the field of art.

M. G. van Rensselaer.

Which is the Better Way?

ONE difference between landscape painting and landscape gardening is that the trees and shrubs in the picture of the painter do not grow, while those in the gardener's picture do grow. Hence the former is free to show his group fully grown at once, while the latter must wait for years until his little specimens attain the desired size.

Two methods of planting are practiced. One attempts to produce present effect; the other aims at ultimate results.

Planting material is usually small. This is especially the case where novelties are used. Hence a design of planting, no matter how carefully studied for future effect, may give meagre results at first—the grounds will appear not fully furnished, and the impatience of the owner will compel the landscape gardener to plant greater quantities than one educated to foresee future effects would deem advisable.

On the other hand, if the design is made to produce immediate results, the growth of the planting will in time cause a surfeit, and finally the grounds will appear to be as much overplanted as they would at first seem to be unfinished on the other plan, and with this difference, the overplanted grounds will not improve, but the surfeit will increase. Individual specimens will encroach upon and destroy each other. Here the "survival of the fittest"—that is, the fittest for beauty and interest—will not always occur. The more delicate, and, oftentimes, the more beautiful, will be crowded out by the coarser growing kinds. As a reply to this objection, how many times have I heard it said, "Oh, well, we will 'thin out' as the specimens grow." But the trouble is, the owners of overplanted ground do not "thin out," but everything is left to grow together "until the harvest," and that harvest generally is a rooting out of all and a more judicious planting made to take the place of the old. Sometimes it happens that the harvest is deferred until the harvester appears in the person of a new owner.

I have in mind a case of overplanting which I was called upon to remedy some ten or twelve years ago. The former owner had died, and the property came into the hands of a new proprietor, who, soon after the purchase, sent for help. He said that he felt there was something the matter with the grounds, but he did not know exactly what. I suggested suffocation. "That's it," he replied; "see if you can get rid of it." And thereupon some four hundred trees and shrubs came out at once. In one or two instances it was absolutely necessary to remove more than would have been advisable had more judicious methods of planting prevailed at first. Masses of evergreens entirely filled up spaces where glades and vistas ought to have appeared. These would have been secured if two or three trees only had been originally planted, and even now the removal of a part of these masses would leave the needed opening; but the trees were so thickly grown together, that taking out a part would have exposed dead branches all up the sides of the trees left standing, and therefore the removal of every one was necessary.

From what has been said it appears that both methods of planting have their faults. That by which present effects are secured eventually produces a surfeit, which will not improve as time goes on. The design made to secure future results, at first gives an appearance of bareness, which gradually disappears as the design comes to full development.

In my reference to overplanted grounds, I have stated facts as they ordinarily occur. There are exceptions. Grounds can be and are planted so as to give pleasing results at first, and then are so carefully watched, and so promptly relieved of any undue crowding, that all continues satisfactory. Nevertheless, a long experience has convinced me that with a carefully studied design the most satisfactory results will follow when only those trees and shrubs are used which are intended to remain. The reason is obvious. In the first case the intention of the design becomes indefinite and wavering, as individual members of the overcrowded planting are removed, one after another, to make room for those which are to remain; in the second case, the result is definite, because the intention of the design continues the same. There is no change or fluctuation of purpose. The trees and shrubs when planted were given room for full development, and so to take upon themselves all the beauty and gracefulness of form with which nature has endowed them.

There is one way of securing both present and future effects, and that is the planting of large trees; but this is costly, somewhat doubtful in its results, and it can be of but limited use.

B. S. Olmstead.

[There are cultural advantages in planting trees and shrubs so closely that they will protect each other when small, and if the plants that are to remain were designated in the original plan and those used for supplementary purposes could be removed at the proper time, close planting would be the best practice. But few men have the strength and persistence of purpose to root out thrifty trees and shrubs as they begin to crowd, especially those which they have planted themselves. Besides this, frequent changes of owners help to defeat the best intentions in this matter. Therefore it is safer, as a rule, to plant only such trees and shrubs as are meant to have a permanent place in a design. It should be added that "novelties" should never be used to produce effects which require time for their development. Who knows how strange plants will thrive in a soil and climate to which they are not accustomed?—Ed.]

Cemeteries.

A CEMETERY is a space set apart from all other uses for the particular purpose of burying the dead and of erecting memorials to them. Its purpose, being so distinctive, should not be confused with that of any sort of public pleasure-ground.

This may seem too obvious to need pointing out, but the fact appears to be that almost every important cemetery becomes noted in a way which shows clearly that its real purpose has become confused with that of displaying what can be accomplished by certain decorative arts. Such a display is out of place and in bad taste. Obviously the rule should be that nothing which is decorative, rare, curious, historical or amusing should be allowed in a cemetery for its own sake, but only as it may aid the true purposes of a burial-ground. Too often, the aim appears to be to afford gratification to those who come to the cemetery in the same frame of mind in which they might be expected to go to a fine public garden; that is, on the alert to admire "Nature's bright productions," "triumphs of horticultural art," and things "rare and curious." They try to ignore the graves as unfortunate and inharmonious objects, but gaze with pride, if they are natives, or with envy if they are from another town, at the largest and most costly monuments, just as they would at a new court-house or triumphal arch. They are attracted as by a show. The cast-iron fences and most of the other

usual accessories, are sufficiently well adapted to aid in the pleasurable impression which the big, showy monuments and the ribbon-gardening make upon this class of visitors.

The custom of making a display of pretty flower-beds is questionable. A cemetery should be built, planned and maintained with sole regard to its prime purpose, and every respect should be shown for the feelings and sentiments of mourners and those who visit the place in a serious and contemplative frame of mind. Not that there should be a prevailing aspect of gloom and sadness, or anything approaching desolation and dreariness; but certainly any appearance of gaiety and festivity, and all bright, lively, ephemeral decoration such as might be appropriate to certain kinds of pleasure-gardens, should be carefully avoided.

The best that planting can do for a cemetery is to give an appearance of unity to a necessarily more or less heterogeneous collection of individual monuments; to give as much sense of seclusion to all parts of the grounds as possible; to isolate each monument from its neighbors; and to form a background and frame to each important monument. A certain kind of decorative planting is admissible, on the same principle that picture frames may be decorated. That is, it should be in keeping with and subordinate to the greater work of art which calls it into existence, but it should be used very moderately and with careful discrimination, else it had far better be omitted. Simplicity is the safest rule to follow in most instances.

Brookline, Mass.

J. C. Olmsted.

A Disease of Certain Japanese Shrubs.

IN regard to Professor Gibbs' very interesting communication, p. 40, I would say that I have noted this disease for a good many years. We call it the Japanese "die-back." The cause thereof I know not, but I have observed that it is aggravated when the plants are grown under unfavorable conditions. As a rule, Japanese trees and shrubs dislike drought in summer or winter, hot sunshine at any time, and exposure to searing winds in winter. I have found that Japanese Maples grown in good loamy, moist ground, well sheltered, and faintly shaded in summer, are very little affected by the "die-back," but when grown in exposed situations and dryish sandy land, they are very subject to it.

Cercis Japonica with us has the tips of its shoots killed back a little every winter, but otherwise it behaves very well. *Exochorda grandiflora* does not seem affected. *Staphylea Colchica* suffers in this way. *Viburnum plicatum* does not show this disease in our garden, but I know of it in New Jersey, where it is not only affected by this disease, but the ends of the shoots get killed back nearly every year as if it were not hardy enough. *Cercidiphyllum* is hardy and healthy with us; so, too, is *Elæagnus longipes*. *Ampelopsis tricuspidata* gets killed back a good deal in winter, but seems to enjoy immunity from the summer "die-back."

But we have other than Japanese shrubs that are affected with summer "die-back." Take, for instance, our native *Hydrangea quercifolia*; it is as bad, or worse, in this respect, than a Japanese Maple. And what can be worse in this way than *Rhus Cotinus*? Even of old and apparently most healthy specimens, half the bush will sometimes die back to the ground in summer, and unaccountably. Deciduous Azaleas likewise die back a deal in summer, but in their case especially I am certain the disease is greatly aggravated by unfavorable conditions of cultivation.

Wm. Falconer.

Fruit Growing in Florida.

TAKING up the subject of fruit culture in Florida at the point marked by the "semi-centennial freeze" of 1886, it may be said that the Orange, Lemon and other Citrus fruits have held their own, and that the crop of fruit next winter is likely to be four times as large as that which was nipped by the memorable frost.

Before the frost some little interest had been aroused in certain other fruits that had recently been introduced, and during the following year their merits were discussed with eager interest, for public confidence in the Orange had, in fact, been seriously shaken, and the importance of diversification was generally conceded.

The most noted of these new fruits were those odd Chinese Peaches, the Honey and Peen-to, the former with a beak-like

point, and the latter drawn in at both ends like a certain style of pin-cushion. The Le Conte and Keiffer Pears were also much talked of, and likewise the Japan Persimmon. On these the Florida nurserymen bestowed much attention in 1886, and still more in the following year, the demand for such stock increasing enormously. There are nearly 100 nurseries named and advertised in Florida, yet the population of the State, including negroes, is only about 400,000. Large orders for young Orange trees were received from California last winter, and tens of thousands were shipped to that State.

In 1886 one of the Japan Plums, which came from California nurseries under the name of Kelsey's Plum, was fruited in Florida from a bud of the previous year. It proved to be remarkably vigorous and precocious, bearing fruit of large size (over two inches in diameter), of fine flavor, with small pits, not subject to curculio—in short, a marvelously fine Plum, in all respects. During the same year some seedlings—perhaps hybrids—of the Chinese Peaches were brought to notice, and nurserymen have made a specialty of them. They are superior to the originals, and the tendency to variation indicates that, by selection, still better varieties may be obtained in the future.

Of the Pears mentioned, the Le Conte has grown steadily in favor. In the country around Tallahassee it was a source of considerable revenue last year, and plans are on foot for establishing an exchange for handling this year's crop. As to the Japan Persimmon, the only question is in regard to its qualities as a marketable fruit. It is hardy, healthy, and precocious in bearing, but, like the Loquat, its status is not fully determined. Both of these trees, as to foliage and fruit, are very ornamental, and are great acquisitions to the orchard, if only for home use. The same may be said of the Guava, which is scarcely less valuable to the people of the southern half of Florida than is the apple in more northern States.

The Grape is another fruit that has acquired prominence since the freeze of 1886. European grape-growers have established extensive vineyards in certain localities and have found some varieties to do remarkably well. Professor E. Dubois makes a specialty of wine-grapes. He is enthusiastic in praise of the Cynthiana and Norton's Virginia, two seedlings of *Vitis aestivalis*.

The Fig, Pomegranate, Mulberry and Olive have long been cultivated in Florida, and deserve more attention than they receive. The Fig grows almost spontaneously. The variety so extensively imported succeeds finely, and, with proper appliances for drying, it ought to be grown profitably for market. In the northern counties considerable attention has been bestowed on the Pecan and the English Walnut, and many plantations of them are growing. The Almonds and foreign Chestnuts may also be grown for home use.

To summarize, the present aspect of fruit-culture in Florida may be stated as follows: On the southern coast Pineapples are grown for market in large quantity, and large plantations of Cocoanuts have been started. Many other West Indian fruits are grown there for home use. Throughout the southern half of the peninsula the Pineapple and Banana fruit well, and the latter is grown for ornament throughout the State. The Mango, Avocado Pear, Sugar Apple, Sapodilla, and some other sub-tropical fruits, succeed well as far north as Tampa Bay, and Guavas nearly to the northern border, but a cold wave like that of 1886 will cut them down. All the fruits previously mentioned do well, except in the southernmost counties.

The fruits shipped out of the State rate in importance about as follows: Oranges, Pineapples, Strawberries, Pears, Peaches, Grapes and Persimmons. The Apricot, Quince and Apple are occasionally met with. The latter promises to succeed best grafted on the Pear. Of Plums, numerous varieties are in cultivation, the Wild Goose and Marianna being the best native varieties, and Kelsey's the best of the Japanese, with numerous others yet to be introduced. Of Peaches, the Peen-to and its seedlings succeed well in sandy lands, and some varieties of the Persian strain where there is clay sub soil.

Taking a brief retrospect, it is evident that horticulture in Florida has made greater advances within the last two years than during any four years in her previous history. Hundreds of thousands of deciduous fruit-trees and vines have been planted. New varieties have been tested. More attention has been given to the science of horticulture. A reform in the system of selling and shipping Oranges and other fruits is in progress. Improved transportation and appliances for refrigeration are being provided. Fruit-growing is steadily increasing in importance, and in most portions of the State it will long continue to be the favorite industry.

A. H. Curtiss.

Jacksonville, Fla.

New or Little Known Plants.

Yucca filifera.

THIS, the "*Palma*" of the Mexicans of Nuevo Leon, and the largest of the known species of *Yucca*, is certainly one of the most remarkable and interesting trees of North America. It was first discovered about 1840, near Saltillo in north-eastern Mexico, by Dr. J. Gregg, author of the well known "Commerce of the Prairies." It was next seen in December, 1852, between Parras and Saltillo, by Dr. George Thurber and a party of the United States Boundary Commission, and is referred to, but without characters or description, in Dr. Torrey's "Botany of the Boundary." A figure of the tree, however, appeared in Mr. Bartlett's "Personal Narratives" of the Boundary Surveys, vol. ii., p. 491.

by whom plants were raised and distributed. One of these flowered in 1876, in the garden of the Baron Prailly, near Hyères, and was figured and described by Chabaud in the *Revue Horticole*, under the not very fortunate name of *Yucca filifera**, by which this tree must now be known.

Yucca filifera is a wide-branching tree often 50 feet in height. The short trunk, 15-20 feet high in fully grown specimens, and not rarely five feet in diameter above the somewhat swollen base, is covered with dark brown scaly bark. The leaves, persistent upon the stout branches for many years, are thin, smooth, narrowly oblanceolate, 18-20 inches long, with fibrous edges, the threads white, or sometimes reddish-brown. The pendulous panicles appear in April and May; they are 4-6 feet long and 18-20 inches wide. The flowers are small, 2-3 inches wide, the ovate, or lance-ovate, narrow segments rarely exceed-



Fig. 13.—*Yucca filifera*

This figure very well shows its habit except that the great panicles of flowers are represented upright on the summit of the branches as in other species of *Yucca*, an error due, no doubt, to the fact that the trees, being at that season of the year out of flower, the artist was obliged to draw upon his imagination so far as the inflorescence was concerned. This mistake led Dr. Engelmann, with only the very insufficient material brought home by Gregg and Thurber at his command, and after him Mr. Baker in England, to consider the plant a southern variety of *Y. baccata*, from which, however, it differs in its much thinner and smoother leaves, smaller flowers, shorter and less fleshy fruit, and pendulous inflorescence. Some time previous to 1860, the collector Roehl rediscovered the tree, and sent seeds to the nurseries of Huber & Co., of Hyères, in France,

ing an inch in length. The baccate pendulous fruit, often constricted on the side towards the stem, is 2-2½ inches long, with seed often exceeding a line in thickness.

Yucca filifera is a conspicuous object on the arid plains which rise from the Rio Grande to the foothills of the Sierra Madre. The great panicles of white flowers can be seen for miles in the clear atmosphere of that region, and look like gleaming waterfalls pouring out from the ends of the branches. It first appears about 50 miles south of the Rio Grande, where, with the beautiful white-flowered *Cordia Boissieri* in the depression of the plain, it forms an open picturesque forest which extends almost to the valley

**Yucca filifera*, Chabaud, *Rev. Hort.*, 1876, p. 432, f. 971.—Carrière, *Rev. Hort.*, 1879, p. 262.

Y. baccata, var. *australis*, Engelm. *Trans. St. Louis Acad.* iii. 45.—Baker, *Jour. Linn. Soc.* xviii, 229.



Fig. 14.—*Yucca filifera*.

of Monterey. The *Palma* is common in the plains between Saltillo and Parras; it was seen by Dr. Parry as far south as San Louis Potosi, and it will be found, no doubt, to extend widely over the high dry plains of north-eastern Mexico.

This tree is often cultivated by the Mexicans at both Monterey and Saltillo, the young plants being used to form high impenetrable hedges about houses and stock-yards; and flowering plants, from Roezl's introduction, are not rare in the gardens of Southern France, Algeria and northern Italy. It is hardy, according to Naudin*, wherever the Orange will thrive. Our illustrations (fig. 13, p. 78, fig. 14, p. 79) are from photographs taken near Monterey by Mr. J. M. Codman.

C. S. S.

**Manuel de l'Acclimateur*, p. 558.

Chionophila Jamesii.*

IN 1821 Dr. Edwin James accompanied as naturalist the government party which, under Capt. Long, ascended the South Platte, skirted the eastern base of the Rocky Mountains as far southward as Colorado Springs, and thence returned east by way of the Arkansas. From Colorado Springs Dr. James made the first ascent of what is now known as Pike's Peak, and there gathered the first collection that had ever been made of the alpine plants of western America. Among them was a single specimen of the plant

*C. JAMESII, Benth. in DC. Prodr. x, 351. A dwarf alpine perennial, glabrous or nearly so, with thickish entire oblong-lanceolate radical leaves; stems scape-like, bearing one or two pairs of narrowly linear leaves and a close secund imbricately bracted spike; calyx broadly funnelform, with five short blunt teeth; corolla cream-color, tubular, half an inch long, with short bilabiate limb and bearded in the throat; sterile filament glabrous.

which is here figured. This, with others, was referred to Dr. Torrey for determination, but unfortunately it became mixed with specimens of *Pentstemon Jamesii* and so was overlooked, and eventually found its way to the herbarium at Kew. Here, twenty-five years later, it was detected by Mr. Bentham while he was preparing the *Scrophulariaceæ* for DeCandolle's Prodrômus, its peculiarities were recognized, and it was described as a new genus. Fifteen years later still, in 1861, Dr. C. C. Parry ascended the cluster of now well-known peaks which were named by him Torrey, Gray and Engelmann, and upon the summit of Gray's Peak he rediscovered James's plant. Since that time it has been found in the same region by several collectors, but it yet remains the sole representative of the genus.

As shown by the figure, the leaves are mostly in a basal cluster, with one or two pairs of linear ones upon the low scape-like stems. The cream-colored flowers are in one-sided bracted spikes, the two-lipped corollas bearded in the throat and not greatly exceeding the calyx. The genus is closely related to *Pentstemon*, from which it is distinguished chiefly by the tubular and short-toothed calyx and by the spicate arrangement of the flowers. This inhabitant of our highest snow-clad peaks cannot be said to be remarkable for its beauty, but as a rarity and as the only one of its kind it deserves a place in every collection of Alpine plants.

S. W.

Cultural Department.

Pruning Shrubs.

TO the repeated inquiry as to the best time and method of pruning deciduous shrubs, it may be answered that no single rule can be laid down that will apply to all cases. Shrubs, like trees, are pruned for different purposes, and what is good practice in one case may be ruinous in another. A tree for the lawn requires different treatment from a street tree, and the rule for pruning an apple tree to induce an abundant yield of the best fruit would not apply to another tree where timber or fuel was desired. In the same way the pruning of a shrub may be good or bad according to the object chiefly desired. What is the best practice when the production of flowers is the main consideration may be far from good practice when the symmetry or grace of the shrub itself is the leading purpose.

There is little doubt as to what is the worst method of pruning, and that is, shearing off the shrubs of a border, at a uniform height, as squarely as a hedge is trimmed, and cutting back single specimens with absolute evenness all around till the plant assumes the shape of an egg or a perfect sphere. The only parallel to atrocities of this kind is seen in the work of professional tree-butchers who go about the streets of towns and cities amputating all the branches of the street trees and leaving nothing but forked posts. And yet in many cemeteries and private grounds in city suburbs shrubs are mutilated in exactly this fashion by men pretending to be professional gardeners. Of course all the beauty and grace of the plants are destroyed.

And how about the flowers? A large percentage of flowering shrubs bloom in the spring, and most of these form their blossom-buds on the small branches that were made the year before. In each bud is a flower safely protected from the winter weather and ready to open with the warmth of the coming year. These are the branches lopped off by the shears in autumn or early spring, and with them are sacrificed the buds and promised flowers. If the pruning is delayed after the shrubs have bloomed they will make an effort to repair the loss by throwing out new shoots, which will ripen and bear abundant flowers the next year. In the case of shrubs like the *Althæa*, the Great Panicked *Hydrangea*, and some species of the *Tamarisk*, which bloom in the fall on wood grown the same year, a hard cutting back between late autumn and early spring will destroy no flower buds, but will encourage a strong growth of flowering wood for the next autumn.



Fig. 15.—*Chionophila Jamesii*.

But shrubs, as a rule, are in flower but a short time comparatively, and it is rarely advisable to adopt a treatment which has in view this brief season only. Even in winter a mass of shrubbery has a beauty of its own. Every thicket is enveloped with a nimbus of delicate tints, violet, rose, soft gray and faint olive, which comes from the combined colors of the twigs. This is true not only of those shrubs which have bright colored bark like the crimson of some Dogwoods and the yellow of the Willows. Many others whose single shoots show no striking color on close inspection are surrounded by this halo when they are massed so that the faint tints of each twig are all gathered and fused together. At all events, a mass of this kind is more beautiful than a row of *Althæas* cut back to bare poles. And in the season of foliage a severely pruned shrub is deprived of that flowing grace of outline which is one of its principal charms.

For general purposes, therefore, shrubs should never be cut back so far as to impair their vigor; nor should they be pruned so as to destroy their natural outlines. They should rather have the weak shoots thinned out and be cut back cautiously so as to develop their best form.

Shrubs like Thunberg's *Spiræa*, which bloom early on wood of the previous year, should not be pruned in autumn or early spring where it is desired to secure abundant flowers, but immediately after the blooming season.

Shrubs that bloom late on wood of the current year should be pruned after the leaves fall in autumn or in early spring before they start.

S. A.

The Cultivation of Lilies.

WHAT soils do Lilies require, or in what kind do they best succeed? are questions often asked; and a fitting answer is, that it makes but little difference. The character of the soil is of less importance than its condition. I have planted Lilies in soils varying from the heaviest clay to the lightest sand, and have had perfect success in all. My preference is a light loam, moderately moist and rich, and in partial shade. If that is not at command, I plant in such as I have, with full confidence that a soil which will yield a good crop of garden vegetables will produce Lilies.

It is a mistake to suppose that each plant needs a soil with certain specific characters for its perfect development. It is safe to say of Lilies, at least, that all the species will thrive in the same soil. Make a heavy soil rich and provide good drainage, and you will get an abundance of Lilies. Make a light soil rich and keep it moist by a liberal mulch, and the result will be the same.

A common cause of failure in Lily-culture is planting in wet situations. Too much water around the bulbs in winter is about as injurious as too many degrees of frost. While the Lily prefers a moist and cool situation, it will not thrive where the soil is covered with water during winter.

There are many gardens noted for productiveness which cannot be planted until long after neighboring ones because of too much moisture; such are not suited to the Lily. The remedy in such a case is a raised bed, which may be prepared by marking out a bed of a required size and digging the earth deep. Then on the surface place stones, of about the size used for paving, some ten inches apart each way. Fill the spaces between the stones with soil level with the tops. Upon this place the bulbs, and between them put smaller stones; then cover the bulbs to the depth of six inches with good rich soil. The bulbs should not be placed nearer than one foot from the edge of the bed, which edge should be nicely sodded and kept neatly trimmed during summer. Upon the approach of frost, mulch a little more heavily than if the bulbs were planted in the ordinary border.

With these precautions, nearly all Lilies can be grown in the greatest perfection.

For the perfect development of the flower, a few other precautions are necessary. The first is to cover the bed during summer with some neat mulch, in order to keep the ground cool and moist; this is not only necessary for the full development of the flower, but for the growth of the bulb, and the flowers the coming season will be numerous and strong just in proportion to the size and strength of the bulb formed this year. For mulching, some low-growing annuals should be used, such as Verbenas, dwarf Petunias, or any other that fancy may suggest. This applies only to Lilies in a raised bed; when they are planted in the shrubbery-border, an excellent place for them, this precaution is not necessary.

The second precaution is, to have the Lily-bed partially shaded, to protect the plants from the mid-day sun. This may be done by a light lattice-covering, say three or four feet above the plant; or by arranging a frame with a light canvas covering, to be used only in excessively hot weather. This will not only prolong the season of flowering, but the flowers will be larger, the colors and markings better defined, and the whole plant stronger and more healthy. Of course, good flowers can be produced without these precautions, but better ones can be produced with them.

When to plant is an important consideration. It is well known that the best time to remove plants, and particularly bulbs, is during their period of rest. The Lily has but a short season of rest; it is constantly doing something in the way of development, but its energies are only employed in one direction at one time. The growth of stem and flower consumes the bulb, which, in its turn, is built up by the action of leaf and stem. It is better to transplant as soon as possible after the bulb has perfected its growth. If taken up at this time the bulbs can be packed away in leaf-mold until spring, if necessary. It is far better to take up, separate the bulbs and plant out the same day. Bulbs should remain dry but for a very short period. In importing new varieties and for purposes of sale, it becomes necessary to keep them dry longer than they should be. Every day they are exposed to the air materially weakens them, and often beyond their power of recuperation. No wonder growers get discouraged in their efforts to exhibit a Lily-bed, when they buy bulbs that have been in dry sawdust, or exposed to the dry atmosphere of the seed-room, from October until May. Such bulbs will not recover their strength, if ever, until long after the hopes of the buyer have been blasted, and he has bestowed his blighted affections on some other plant.

When Lilies have become established frequent removals are not desirable; they should remain undisturbed as long as they flower well. It is well to remove the small bulbs that form at the base of the stem in early spring, and transfer them to the reserve ground to complete their growth and be ready for future use.

C. L. Allen.

Seedling Rhododendrons.

I THINK we ought to encourage the raising and planting of seedling Rhododendrons more than we do. By raising them from seeds saved from the hardiest varieties already in cultivation we may reasonably expect a majority of the seedlings to prove hardy. And I have no doubt in point of vigor and health the seedlings have the advantage over the grafted plants. But in the production of flowers I am inclined to think that the grafted plants will bear more than will the seedlings, because, being less vigorous, they are more branchy in proportion to their size, and every little shoot among Rhododendrons should carry a bunch of flowers.

Four years ago last fall we planted a hundred seedlings in one bed. They were then some 20 to 24 inches high, and well set with buds. In spring they bloomed as if nothing had happened, and have ever since grown and flowered most satisfactorily; and all are still alive and in excellent health. Now, the most striking feature about these seedlings is their vigor. They have outgrown a lot of grafted plants that occupy the same bed with them and which are considerably older than the seedlings, and there is more suppleness in their wood and freshness in their foliage than the grafted specimens show. The flowers of all are beautiful—indeed, many of them are as good as those of some of our named sorts. But while these seedlings, so far, have proved hardy here, in less favored localities, no doubt, all of them would not prove hardy. But surely we can raise seedlings that will prove hardy generally from *Everestianum*, *Album elegans*, *Abraham Lincoln*, and other hardy kinds.

We mulch this seedling bed with oak-tree leaves; throw them in loosely among the bushes in fall, and about 12 to 18 inches thick, and leave them there winter and summer. The frost never penetrates through this mulching; nevertheless, although the soil about the roots never freezes, and the tops may shiver and droop in zero weather, I never have known the plants to be injuriously affected by these apparently inconsistent conditions.

W. Falconer.

[The disadvantages of planting seedling rather than named, tried varieties of Rhododendrons, are that more or less of the seedlings prove too tender for our climate, and that many of them produce inferior flowers. For most people, especially for those who only need a few plants, the named varieties will be found the most satisfactory. Layered, and not grafted, plants should be used whenever they can be obtained. They grow better, and are not troubled with the suckers, which spring up from the stock of grafted plants.—Ed.]

Chrysanthemum Notes.—Chrysanthemums from this time will be much better without any fire-heat. There is no better place for them than a cold-frame sunk a foot below the ground level. They should not be set close together—a space of at least an inch between each pot should be allowed. It is not that the plants themselves would crowd each other when closely packed, but each pot will be found to have the roots strong and vigorous around the outside of each ball of earth. They should be covered every night with something more than ordinary glass sash, for at least a month to come, and I know of nothing better than the cloth made by the United States Waterproof Fibre Company. I have frames made to fit sashes six by three feet, covered with the cloth and put on every night, and it is astonishing how much frost they keep out. All plants as they become well rooted should be repotted before becoming pot-bound. The black aphid should be kept well in check. I use, first, wherever practicable, fumigation with tobacco, once every week; then I dust the plants over head with pure tobacco dust. I have found plants injured when using tobacco snuff. Finally I syringe with tobacco-water, made strong enough to have the appearance of black coffee. The white mildew must be fought with sulphur. I mix equal parts of sulphur and very fine flue-dust from hard coal. With this I thoroughly sprinkle the plant above and below and leave the dust on for a couple of days. If at any time it is not possible to repot plants when they become pot-bound, give an occasional watering of liquid manure to keep up the food supply. Do not neglect to keep plants staked as they grow.

John Thorpe.

Acacia pubescens.—This plant was introduced into cultivation a century ago by Sir Joseph Banks, but no one has ever tired of the beauty of a fine specimen when in bloom. Coming from the extra-tropical regions of Southern Australia, it can be kept in a cool house where the temperature does not fall below 40°, and it requires the simplest treatment. It comes into bloom in February and continues to flower from four to six weeks. Although the flowers when cut wither in a few hours, a well grown specimen in bloom is singularly beautiful. I lately saw one that had grown up with a single stem and then spread out into the form of a tree some ten feet high, with broad top and drooping branches. Every twig was thickly hung with pendulous racemes of canary yellow flowers, which showed at their best against the delicate foliage, and made a sight to be remembered long. S. A.

Hardy Rhododendrons.—Let me add to the list of hardy Rhododendrons given in GARDEN AND FOREST of March 14th the names of the following, which come through the winters of this latitude in perfect safety:

Chancellor, dark purplish crimson; Cyanum, bluish white; Gloriosum, creamy white; Michael Waterer, crimson spotted; Minnie, bluish white; Perspicuum, clear white; Pictum, clear white, spotted; Queen, cream, edged with pink, and Oculatum, light pink.

Joseph Meehan.

Germantown, Pa.

The Forest.

Tree Planting in California.

THE following is part of an address delivered before the American Horticultural Society at its late meeting, at Riverside, California, by Mr. Robert Douglas:

The Legislature of the State of California has granted an appropriation for the establishment of experimental stations for testing fruit, ornamental and forest trees. And its citizens generally seem to be awake to the necessity of planting forest trees.

This experimental work cannot be commenced too soon, for while individual enterprise has been employed in thoroughly experimenting with every kind of fruit to an extent which is simply wonderful, the noble indigenous trees of the State have been sadly neglected. In deed, with the exception of a few stately specimens in the Capitol grounds at Sacramento, we rarely find a specimen except the Monterey Cypress (*Cupressus macrocarpa*) and Monterey Pine (*Pinus insignis*) planted everywhere, while specimens of *Sequoia gigantea*, *S. sempervirens*, *Cupressus Lawsoniana*, *C. Goveniana*, *Thuja gigantea*, *Libocedrus decurrens*, *Pseudotsuga Douglasii*, *Picea Sitchensis*, *Abies concolor*, and other noble Silver Firs and Pines are rarely met with.

Forestry is a subject of great importance to this State, and the time will soon arrive when it cannot longer be neglected. The conditions here differ so materially from those of the Atlantic slope that our experience there will not avail us to any great extent here. Forestry here must be confined mainly to desert and hilly lands that cannot be irrigated.

A transient visitor from the East, looking from the window of a sleeping-car, would see a very discouraging prospect. The desert is certainly not promising to him, and the hills look little better. The word, desert, is not well understood. Many agriculturists and horticulturists in Kansas and Nebraska claim that they have brought their land from a desert to rich fertile land within two or three decades. They tell you that their States are a part of the "Great American Desert," and refer you to a school-geography to prove what they say, but they do not seem to notice the fact that in this same school-book there are woodcuts of Indians chasing immense herds of buffaloes, wading through very tall grass.

When the emigration of 1849 went through the Territory of which Kansas and Nebraska is now a part—and that was before there was a white settler in the territory—the land lying between the Missouri River and the Rocky Mountains was called the Plains. The desert of the "Forty-niners" lay between the sink of the Humboldt and the Sierra Nevada Mountains. And many years before that time the Santa Fé traders crossed the Plains from Leavenworth to Santa Fé.

The settlers in Kansas and Nebraska claim that they can grow cultivated crops where they could not be grown twenty-five years ago. This is undoubtedly true and can be readily accounted for.

Before the whites settled west of the Missouri River the land

through central Kansas and Nebraska was covered with Buffalo Grass, which kept the rains from penetrating the ground almost as effectually as would a shingle roof. I have thrust my cane into the ground a few minutes after it has been flooded with rain, and found it as dry as dust two inches from the surface. The rain ran off in torrents into the ravines and "draws" without having a perceptible effect except on the surface. You might see the plains covered with water, looking like a lake with many islands, and within two hours from that time scarcely a sign that there had been any rain at all. Since that time millions of acres have been plowed in Kansas and Nebraska, and, aside from this, 147,000 acres have been planted with forest trees in Kansas, besides a large number planted last year; and a great many more have been planted in Nebraska than in Kansas.

Now, when we consider that an inch of rain is equal to one hundred tons of water per acre, and multiply the millions of acres of plowed land by the number of inches or hundreds of tons that have been absorbed in the plowing, which formerly ran off, we can see that the settlers have materially changed the condition of the plains.

While your desert lands look very unpromising to the tourist, even when compared with the plains, the close observer will see many things, aside from climate, in your favor.

Any one studying these deserts carefully will see that, lying neglected, they must be gradually growing drier and drier. This is plainly to be seen. We see that where deep lakes once overflowed no water stands now. Where monstrous trees once grew, as shown in the petrified forests, only pigmies in comparison grow now. We see that the channels of the streams are gradually being cut deeper, which, of course, drains the country more rapidly.

Although I have not had the opportunities for studying tree-growth on this side of the continent that I have had on the other side, I have yet seen some very encouraging signs. I have seen changes recently in parts of the country I went over in 1849 that are well worth noting and give great promise, even on what were then desert lands pure and simple. On the other hand, I have carefully observed, especially in one or two cases, that among millions of trees covering miles on the side of a desert, I could not find a single tree less than fifty or seventy-five years old, although these trees are covered with seeds and there are no indications of a fire ever having visited them. This is proof, to my mind, that the climate is drier, as seeds cannot germinate now where they produced seedlings less than a century ago.

Any one who has studied these desert lands, even when on a flying trip, will see enough to convince him that if irrigation could be secured there would be very little desert land in this State. I firmly believe that on any desert land where Sage Brush and other shrubs are growing even sparsely, forest trees will grow if the land is cleared and well plowed, which is a very cheap and simple affair compared either with clearing grub-land, timber-land, or breaking prairie in the Eastern States.

The forest trees must be planted during the rainy season, and cultivated at least during the succeeding season. It is surprising to see how the land in this State endures drought when compared with similar land on the other side of the continent. I have seen our gravelly land in Illinois without apparent moisture at three feet in depth after a drought of only six weeks. I have noticed men digging only two feet deep for telephone poles in this State and the moisture was perceptible, although there had been no rain for nearly six months.

This is not a solitary case, but it is usual, as I have frequently noticed in new railroad-cuts. In the East a hard-pan lies at a certain depth from the surface, through which the moisture cannot be brought up by capillary attraction. In this State the soil generally is loose and porous down to the bed-rock, however deep that may be, consequently all the deciduous fruits may be grown without irrigation, but they must be thoroughly cultivated to get the best results.

All through the San Gabriel Valley, and in other parts of the State that I have visited, the indigenous trees thrive best on the north sides of the hills—indeed, the hills are generally destitute of tree-growth on their southern sides, bearing only shrubs, perennial and annual plants, and a scanty growth at that. Yet I have seen Eucalyptus growing, when planted, on the very summits of some of these hills, and on their southern slopes. In very many of these hills the soil is rich enough for tree-growth, even to the very summit—indeed, I do not remember an exception, unless in cases where the rock protruded.

It becomes me to touch the subject of irrigation with modesty, for I received a severe rebuke for the first opinion I ventured to express. A gentleman was irrigating a fine Araucaria; he had the earth scraped away from the collar of the tree, forming

a basin about three feet in diameter and six inches deep; he was flooding this with cold water in the heat of the day, and threw the water with such force from the hose that the crown of the roots was laid bare. I told him I thought he ought not to disturb the surface so near the trunk of the tree, as the feeding roots lay at some distance. He replied that the Mexicans had irrigated for a hundred years, and he guessed they knew more about it than a new-comer. I pocketed the affront, and asked him how long he had lived in the State; he said, over two years. Then I wondered he had not called me a "tender-foot."

No doubt a great deal has been learned from the Mexicans, yet I think our people can soon make improvements on what they learn from them. The more I observe and study this desert question, the more I become convinced that progress will be made in this direction much more rapidly than the most sanguine can imagine. Scientific men may attempt to prove to you that according to natural laws the thing is impossible. Less than fifty years ago they said, and wrote, that valuable trees could not be grown on the Illinois prairies, until many generations of Willows and Poplars were grown to fit the land for the more valuable kinds; and at that time it was the general belief of prairie farmers, that trees and the "tame grasses" would never succeed on prairie lands. Now we know, and have long known, that our prairies grow every kind of tree and grass that will bear the severity of our climate.

You will make much more rapid advances than we made in the Mississippi valley. Our settlers came in covered wagons, yours come on express-trains; you have improved labor-saving machinery, which was not then invented; and last, but not least, you have a stable currency, and are not left to the mercy of wild-cat banks.

Reservoirs will be built to husband the waters that are now running down the rivers into the ocean, artesian wells will be used in many places, thousands of acres of forests will be planted that will not grow as rapidly as if irrigated, but after they are planted and cultivated, the earth will absorb a great quantity of water that formerly ran off. The trees will shade the ground, which will gain in both moisture and fertility, as they will draw nutriment from an immense depth while our forests draw their nutriment from nearer the surface. The eastern farmer and horticulturist has at best only seven or eight months in the year, and from this must provide enough to support his family, and secure fuel and feed for his stock; aside from this his land is decreasing in fertility, or kept fertile at great expense and labor, while yours will, for a long time, be increasing in fertility, if kept well cultivated and worked deep.

It will require more experience than any of us have had, to decide which will be the most suitable trees for forest planting. Many of the most profitable for Eastern planting would not succeed well here. The soft foliage of the White Pine and Larch would unfit them for this climate, and the tendency to run their roots near the surface of the ground would be to their disadvantage. For desert planting, trees must be used that can be grown cheaply from seeds, so as to come within the means of the new settlers. This would seem to be a necessity. I would place the *Eucalyptus globulus* at the head, as I have seen it growing in what would seem almost impossible places. It would make fuel cheaper than any other tree that could be grown on like lands.

The common locust, *Robinia Pseudacacia*, I have seen growing well in western Kansas and Nebraska, New Mexico, Colorado, Utah, Nevada, and at several places in this State, in every case making a good growth without irrigation; and in all these cases I have failed to find traces of the borer, so fatal to this tree in the Eastern States. Would space admit I might name other trees I should deem promising. These two, however, would furnish fuel and durable posts for the new settler, are grown very cheaply from the seed, and transplant well. For general forest planting there are two valuable trees that stand out in bold relief. In this case there can be no mistake, for nature has succeeded in growing them almost everywhere between the eastern bases of the Rocky Mountains and the Pacific coast, and man has used them more generally than any other trees over the whole western half of the continent. These are the Yellow Pine, *Pinus ponderosa*, and the Douglas Spruce, *Pseudotsuga Douglasii*. The former ranges all through the mountains from British Columbia down into Mexico, through Arizona and New Mexico to western Texas, growing on dry mountain-sides through Colorado and Montana. It forms over ninety per cent. of all the timber in the Black Hills of Dakota, reaches further out on the plains than any other tree in Colorado, and is the only Pacific coast tree that runs east into Nebraska.

Next to the Douglas Spruce it is the most generally distributed and valuable tree of the Pacific forests. The Douglas Spruce ranges through British Columbia, Oregon, Washington Territory, all through the Sierra Nevada, the San Bernardino Mountains, Arizona, New Mexico and on high dry ridges in Colorado, through the Uinta and Wasatch Mountains and in Wyoming and Montana. It is called Yellow or Red Fir by lumbermen, is the most generally distributed, and said to be the most valuable timber tree on the Pacific coast.

This tree grows on high dry ridges in Colorado, Arizona and Montana, which proves it to be, like the Pine, a suitable tree for planting on dry lands. Like the Pine, it is a rapid grower and reaches the largest size. These two trees furnish nearly all the merchantable lumber, except redwood, from the coast to the eastern base of the Rocky Mountains.

The *Sequoia sempervirens*, Redwood, is a valuable tree, but only adapted to certain localities. It has a very circumscribed range, only reaching from about the northern line of the State to the southern boundary of Monterey County, and in a narrow belt along the coast. But experiments may prove that this valuable tree will succeed far from its present locality. I noticed a fine specimen in Pasadena, eight years planted and over twenty feet high. *Pinus insignis*, although its timber is of no great value, may be named as having a very limited range—only found in a sandy spot at a single point on the coast; yet we see it growing well wherever planted. We may hope from this fact that other trees of limited range and more value may have their limits extended under cultivation.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—A few years since I met with, in its wild state, a white-flowering specimen (is it a variety?) of *Phlox divaricata*, which was transferred to my wild garden, where it now flourishes. I have been surprised at the remarkable beauty of the plant. As is well known, this species, at least in its wild state, is of a loosely spreading habit, and rather chary of its stems and leaves, whereas the plant referred to forms a luxuriant and well-rounded head, being generous in stems, leaves and branches. The foliage, too, it may be remarked, is of a distinctly lighter shade of green, readily distinguishing it from the usual form. From the middle or latter part of April until after the middle of May it is covered with a snow-white bloom, making it altogether a plant of striking appearance. As neither Gray nor Wood, in their popular Botanies, make mention of a white variety, and having seen no reference anywhere to white-flowering specimens, I am desirous of knowing whether they are of rare occurrence; and if not, why has so little attention been given by cultivators to so ornamental a plant?

Fairview, W. Va., March 20th, 1888.

W. E. Hill.

[The white form of this flower is not unknown in cultivation. It is contained in Woolson's Catalogue this year. Mr. Woolson writes that it has proved unsatisfactory with him on account of its straggling growth. Mr. F. D. Hatfield, of Wellesley, Massachusetts, considers it a good plant for rock-work or the front of a border. Of course single plants make little show, and it should be grown in masses. From our correspondent's description it is not impossible that he has chanced upon a variety of this Phlox which has special merits.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—I was glad to see the recent article in your paper about Sweet Peas. There are no flowers I love better and none which have given me more trouble; and I venture to ask, therefore, whether you will not now kindly give a little advice with regard to the best methods of planting and treating them in this part of the world.

Leesburg, Va.

Dilettante.

[Any fairly good garden soil will give an abundant yield of these flowers if the seed is only planted early enough. This means just as soon as the ground can be worked in spring, a period which comes some weeks earlier in Virginia than in New York. No injury will come from frosts or even ice. Then plant deeply and plant thinly. Have the soil worked to the depth of eighteen inches or two feet, and drop the Peas in a furrow five or six inches deep. Cover at first with about three inches of soil, and, as the plants grow, draw earth up to them until the bed is level. The roots of Peas like a cool place to grow in. Then, if

every flower is cut every day, and no seed allowed to form, the same plants, with good tall brush to run over, will produce flowers until frost. There will be no need of another sowing for succession.—Ed.]

Recent Publications.

Winter: From the Journal of Henry D. Thoreau; edited by H. G. O. Blake. Houghton, Mifflin & Co., Boston, 1888.

Thoreau left behind him at his death a very voluminous journal in which he had noted down from day to day the sights which had met his eyes in the woods and fields of Concord, and the thoughts which they excited in his mind. On one page of this journal he said that it might be well to write "a book of the seasons;" but as he never accomplished this task it was wisely thought that another hand should compile such a volume from the notes which he had jotted down, perhaps in half-conscious preparation for it. Several years ago "Early Spring in Massachusetts: From the Journal of Henry D. Thoreau," was accordingly issued by Mr. H. G. O. Blake; "Summer" followed in 1884, and just now we have been given "Winter" in a similar form.

More delightful books than these it would be hard for the lover of nature to find. Thoreau was not merely one of the keenest and most patient, but one of the most poetic of observers; his poetic instincts were of that philosophizing kind which bring the inmost soul and needs of man into perpetual relation with external things; and his style is almost unsurpassed for clearness, simplicity, individuality and charm. Whatever he saw, he saw with the soul as well as with the eyes; and he saw everything—from the broadest or most fleeting landscape effects to the most tender beauties of the humblest insect, animal or flower. His feeling for beauty was as intense as his delight in the facts of animal and vegetable existence. If he never speaks like a scientific botanist, he always speaks like an accurate observer, yet always, as has been said, like a poet, too. And when he paints for us what he sees, it is in words which sound like the thoughts of an artist translated from paint into language, with a skill of which he almost alone, among writers of English, has found the secret. There is no artifice, and not even any conscious art, in his manner of writing. What we have in these books are simply notes jotted down at the moment, often out-of-doors, and always for his own eye only. Yet take such a passage as this, for example, and try to match it from the pages of any other writer: "Each little blue curl calyx"—he is speaking of a little aster sheathed in ice—"has a spherical button, like those over a little boy's jacket, little sprigs of them; and the pennyroyal has still smaller spheres more regularly arranged about its stem, chandelier-wise, and still smells through the ice. The finest grasses support the most wonderful burdens of ice and most bunched on their minute threads. These weeds are spread and arched over into the snow again, countless little arches a few inches high, each cased in ice, which you break with a tinkling crash at each step. The scarlet fruit of the cocksaur lichen, seen glowing through the more opaque whitish or snowy crust of the stump, is, on close inspection, the richest sight of all, for the scarlet is increased and multiplied by reflection through the bubbles and hemispherical surfaces of the crust, as if it covered some vermilion grain thickly strewn. The brown cup lichens stand in their midst. The whole rouch bark, too, is encased." This for a microscopic picture; and this for a broad landscape effect: "A beautiful, clear, not very cold day. The shadows on the snow are indigo blue. The pines look very dark. The white-oak leaves are a cinnamon color, the black and red oak leaves a reddish-brown or leather color. A partridge rises from the alders and skims across the river at its widest part, just before me; a fine sight. How glorious the perfect stillness and peace of the winter landscape." To quote from the more human, more philosophical parts of this volume—parts which recall the writings of Emerson in a way which does but accent their own individuality—would be out of place just here. But intermingled as these are with his manifold, exquisite pictures of plant life and of landscape beauty, they do much to make up the charm of Thoreau's most charming book.

In the *Popular Science Monthly* for April will be found a chapter on "The Earliest Plants," extracted from Sir William Dawson's recently published "Geological History of Plants," and further back in the thirty-second volume of the monthly—is a discursive article by Grant Allen on "American Cinquefoils," and one on "Our Forestry Problem" by Mr. B. E. Fernow, Chief of the Forestry Division of the Department of Agriculture.

Retail Flower Markets.

NEW YORK, April 6th.

The trade in plants and cut flowers was very large at Easter. Prices held at a reasonable figure, only selected Hybrid Roses and "Longiflorum" Lilies being somewhat higher, and these only in certain localities. This week there is a glut of cut flowers, and prices are low. The choicest specimens of Hybrid Roses with stems half a yard long, sell for 75 cts. each. Madame Gabriel Luizet Roses are inferior in quality and cost \$6 and \$7 a dozen. Prime Puritans bring \$9 a dozen. Extra fine La France Roses sell for 40 cts. each, and those not so large for \$2 and \$4 a dozen. Ulrich Brünner is exceptionally handsome and costs \$6 a dozen. Selected Jacqueminots are \$6 a dozen, but the majority sell for half that price. The best Catharine Mermets bring \$2 a dozen, and Brides can be had for the same money. Perles des Jardins of excellent quality cost \$1 a dozen, as do selected Niphotos. Mignonette is abundant, a bunch of a dozen spikes costing 50 cts. The Giant variety brings 15 cts. a spike. Lilac holds firm at 50 cts. a spray of two tassels. Violets are of good quality, the Marie Louise bringing \$1.50 a 100 and the single Russian 75 cts. Gardenias cost 25 cts. each. *Narcissus Poeticus* is \$1 a dozen. Daffodils, Lilies-of-the-Valley and Tulips bring from 75 cts. to \$1 a dozen. *Lilium longiflorum* is much preferred to *L. Harrisii*, and brings 40 and 50 cts. a flower where the latter are sold for 30 and 35 cts. Callas bring 25 cts. each. Cyclamen plants averaging twelve flowers are offered for 75 cts. A number of Easter weddings in prospect will keep up a demand for specimen blooming plants and choice cut flowers, Lilies-of-the-Valley in particular. This, with La France Roses, is ordered extensively for ornamental curtains. The steamer trade is just opening, and this will also help to make business brisk.

PHILADELPHIA, April 6th.

Flowers and flowering plants were in greater demand than usual at Easter. *Lilium Harrisii* and *L. longiflorum* were in fine condition, averaging more flowers to the plant than have been seen here before, at prices ranging from 30 cts. to 50 cts. each. None of the leading florists had trouble in disposing of their stock at the highest figures. *Hydrangea Otaksa* and Thomas Hogg were very plentiful; the latter variety, which is a white one, seemed to sell the most readily. Plants growing in 6 and 8-inch pots, with from four to eight well-developed heads, sold at from \$1 to \$5 each. Hybrid Remontant Roses in pots would have been more plentiful but for the dull weather in the early part of the preceding week. Most of them were growing in 6-inch pots and sold at from \$1 to \$1.50 each. Fine Azalea plants, half standards, sold at from \$2 to \$10 each, and very large ones were in demand at as high as \$20 for special occasions. The customers at this great floral festival have very little choice, as the demand is so great that they must take what they can get. Six-inch pots full of Daffodil Van Thol were plentiful and in demand at from 50 cts. to \$1 each. *Gardenia florida* (Cape Jessamine) as a pot plant was a novelty here. That is to say, it was scarce and had not been seen on these occasions for some years past. The price varied from \$5 to \$7.50 each. Most of them were growing in eight-inch pots and were from three to four feet high. Hybrids were from \$4 to \$6 per dozen, excepting some special sorts like Madame Gabriel Luizet, which reached the highest figure at \$7.50 per dozen. Jacqueminots were in as great demand as usual at from \$3 to \$5 per dozen. There is a falling off in the demand for designs. Churches were profusely decorated, but without novel features. There is very little leisure for a study of novelties in decorations at this busy season. Some few Genistas in pots, both large and small, proved useful for decorating and sold readily. Tulips, Lilies-of-the-Valley, Daffodils, Freesias and all varieties of Roses, were abundant, and sold at very good, though not exorbitant, prices.

BOSTON, April 6th.

Easter Sunday and the two preceding days were perfect spring days, and in the bright weather the flower trade was unusually brisk. Never before were so many flowers sold in Boston for Easter. There was no scarcity, however, and prices were therefore reasonable. The White Lily was the single exception, being in short supply, and late comers were obliged to accept substitutes. After the Easter rush there has followed a lull, but many fashionable weddings and other social occasions are in prospect, and all signs point to a large consumption of flowers this Spring. Roses are still abundant and of superb quality. Jacqueminots and Hybrids of enormous size, and with stems two feet or more in length, are to be seen in all the fashionable florists' windows. These bring from \$4 to \$8 per dozen. The longest stemmed flowers always bring the highest price. Mermets, Marechal Neils, Bennetts and Perles are abundant, and are offered as low as \$1 to \$1.50 per dozen. There are a few Lillies at about one-half of the Easter prices. Smilax is very scarce, and the little that is offered is poor in quality. Long-stemmed Carnations are 50 cts. to 75 cts. per dozen. Violets and Pansies, \$1.50 per hundred. For mixed collections of cut flowers there is a great variety of bright and fragrant blooms, such as Lilies-of-the-Valley, Tulips, Daffodils, Mignonette, Forget-me-not, Heather, Heliotrope, Marguerites, etc., with fine Maiden Hair Ferns and Asparagus for green. A bunch of "Pussy Willow" laid on a box of selected flowers gives a pretty finish.

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Tree-planting.

THE operation of planting trees requires deliberation and care. It should be done thoroughly or not done at all. Economy in tree planting means the proper preparation of the ground to be planted, and the use of well selected and well grown trees. The insufficient preparation of the soil and the use of badly-grown and badly-rooted plants is extravagant and wasteful, because such a course must invariably fail to produce satisfactory results. William Cobbet, who more than sixty years ago wrote what still remains the best book on planting which exists in the English language, exclaims, in speaking of the necessity of a thorough preparation of the soil, "How many millions have been *thrown away* in planting! How many thousands of plantations have, at the end of twenty or fifty years, made a beggarly exhibition; and how many of them have wholly failed! Yet, no truth is more evident to my mind than this: that no plantation ever failed, except from the manifest error of the proprietor. It is worse than useless to plant, unless you do the *whole thing well*; because, instead of creating a source of profit and of pleasure, you create a source of loss and mortification."

Trees may be planted in this latitude in spring or in autumn; in more northern parts of the country they can be safely planted only in spring. Whether they are planted in spring or in autumn the ground should be prepared in advance. This should be done for spring planting the year before. This will give time to the soil to settle and become pulverized, and it will enable the planter to consider carefully what trees he will plant and just where he wants to set them. These are questions which should not be left unsettled until the short planting season arrives. The composition of an ornamental plantation—that is, the proper grouping together of different varieties of trees in a harmonious arrangement—requires much consideration and study. Satisfactory results will never be obtained if the arrangement of a plantation is left until the trees arrive on

the ground. The proper preparation of the soil is the foundation of good planting. The best results will be attained by trenching by hand the area to be planted to a depth of two feet. The ground in this way is thoroughly broken up and loosened and the roots of the trees can extend freely in all directions. Care must be taken in trenching to keep all the surface soil on top and not to mix it with the subsoil. Hand trenching is a slow and expensive operation, and few people will undertake it on a large scale in this country. When the ground is not trenched a hole must be dug for each tree. The larger and deeper they are made, the better the trees will grow. Holes twenty feet across and three feet deep are not too large, if large, long-lived and healthy trees are expected. It is impossible to provide too much healthy nourishment for a tree. Small and shallow holes mean small, stunted and short-lived trees. All holes for spring planting should be dug during the previous autumn. As soon as dug the loam should be put back in the holes, and if the land is gravelly or rocky the poor soil should be replaced by loam or peat carefully mixed through it. Peat furnishes valuable food to trees, and almost all varieties enjoy a liberal supply of it. The soil will be thoroughly settled in the holes by spring and all ready for planting, and the small, shallow hole actually necessary to receive the roots can be made then easily and quickly in the prepared soil.

It is always better to plant small trees than large ones. They are more easily and cheaply moved, recover sooner and grow more rapidly. A transplanted tree two or three feet high will soon overtake and surpass a much larger one, and will grow into a more vigorous and beautiful specimen. A vast amount of money and a great deal of time is wasted every year in trying to transplant large trees.

It is not essential in digging up trees to preserve a large ball of earth about the roots. A very heavy mass of earth often breaks the tender roots, and is, therefore, a danger rather than an advantage to the tree. It is essential, however, to preserve as many of the small feeding roots as possible, and care must be taken in digging a tree not to unnecessarily break or mutilate them. All broken roots should be carefully cut away with a sharp knife before the tree is replanted. Care must be taken not to expose the roots to the drying influence of the sun and wind. They should be covered as soon as the tree is dug with a piece of cloth or matting, or they may be dipped in wet mud until they become thoroughly coated. The secret of successful transplanting is to have the soil brought into close and immediate contact with the roots. It is better, therefore, to plant in dry, and not in wet, rainy weather. The coating of mud not only protects the roots from drying, but helps the earth thrown about them to adhere more closely. Two men are required to plant a tree. The hole should be twice the width of the mass of roots, and the bottom should be worked fine with a spade. One man should then hold the tree erect, with its roots carefully spread out in all directions in the hole, while the second man should break the soil taken from the hole, so as to make it as fine as possible, and then let it fall from the spade down upon the roots, while the first man should lift the tree gently up and down that the fine earth may penetrate and fill all cavities about the roots. When the hole is nearly filled in this way the earth should be pressed down with the foot, beginning at the outside of the hole and working in towards the stem of the tree. The hole may then be filled and the soil rammed down solid. Tall trees should be carefully and securely staked as soon as planted. The operation is then finished. It is not uncommon to see water poured into the hole while it is being filled up. This practice does harm rather than good, as it washes the fine soil away from close contact with the roots.

Some planters recommend transplanting coniferous trees during the month of August, but this plan has little to recommend it; and it is certainly safer to move them in the spring. Many people believe, too, that they can only be safely moved late or after they have begun their annual

growth. This is a mistake. Conifers can be safely transplanted just as soon as the soil is dry and friable. They can, however, be moved later than deciduous trees, as they begin to grow later.

These are the general rules for successful tree-planting. Certain families or species sometimes require special treatment. Magnolias should be moved late, and after their roots are in active operation, which is shown by the unfolding of the leaf buds. Walnuts and Hickories, as they have strong, deep tap-roots, should, if they are to grow into fine trees, be planted when very small. Seedlings two or three years old, when finally transplanted, make the best trees. All the Oaks make better trees when permanently planted young. This is true of all the White Oaks. Some of the Black Oaks, however, especially the Red Oak and the Water Oak, can be safely transplanted, if they have been properly grown in nurseries, when they are ten or twelve feet high. Shallow rooting trees, like the Maples, Lindens and Elms, may be moved, with proper precautions, after they have reached a considerable size and age. Small specimens, even of these trees, move better, however, and in the end give better results and more satisfaction.

The man who plants one good tree thoroughly well, and then takes care of it after it is planted, does more for himself and the community in which he lives, than the man who sets a hundred, badly selected and badly planted, or who neglects his trees after he has planted them.

An American School of Forestry.

AN article on another page of this paper gives an example of the close measurements and calculation that are made by expert foresters in countries where every bundle of faggots is taken into account in estimates of forest production. Under such conditions the theory and practice of forestry are brought to a mathematical basis, and the business of the forester not only embraces the art of growing trees and forests, and of utilizing and disposing of wood products, but it necessitates accurate financial calculation, so that the largest possible production may be made with the smallest outlay. The accomplished forester in Germany must be a financier as well as a mathematician, for, practically, he has the handling of large capital invested in wood production. And since the margins are narrow, the time over which the operations extend long and the factors which enter into the calculation variable and uncertain, there must be frequent measurement and constant adjustment and readjustment of the elements of the problem.

It is plain that America offers no field for those refinements of forest practice. So long as there are vast areas where wood can be had for the chopping there will be no call for experts to estimate laboriously the exact amount of increase on a given area of woodland in a year or in a decade. This does not imply that no system of forestry is possible in the United States, but that for the present, at least, it must be a different system. What is known as "intensive farming" would be folly on a western prairie, but agriculture is profitable there, nevertheless, when conducted in a cruder way, or on the only system practicable under the circumstances. The time may come, as a closer husbanding of natural resources is demanded on what are now cheap lands, when every rood of farm land will become as productive as a garden spot. In like manner the time may come when the same care will be given to the details of forest management here that is devoted to them in Germany to-day, and until some progress is made in that direction there is no encouragement here for a young man to study forestry. This is one calling for which no opportunity or opening presents itself in the United States. Nowhere in the whole country is there assured employment for a single trained forester.

Of course no skilled foresters will appear until there is a demand for their services, and there is but one source from which that demand is likely to come for some time, at least. In spite of the unchecked spoliation of our public timber lands, the Government still owns vast forest tracts, situated largely at the sources of our most important rivers. It is true that our national forest policy, so far as any settled policy exists, seems to have been framed for the encouragement of fraud and depredation. But it must be assumed that an awakened and instructed public sentiment will soon force Congress to make some honest effort for the preservation of the public forests. With the effort will come the need of guards and inspectors, whose duties at first will be to protect the timber from fire and thieves and devastating animals. Even an unskilled patrol, if free from political favoritism, and efficiently organized, would save for the country every year many times its cost. But it would soon be evident that for a reasonably successful forest administration, the service, and especially its higher executive positions, would need officers with a special training.

For this purpose, if the highest efficiency were desired, an American school of forestry would alone suffice. There are laws of plant growth and principles of forest management which hold good the world over. But even from a cultural point of view the American forester would need to be learned in American forest-botany and familiar with the modifications of general practice which our climatic peculiarities necessitate. Besides this, he should be familiar with our business usages and our habits of thought in political matters. Years must elapse before a corps of teachers can be gathered and students graduated. And why should such a school attract students, so long as years of thorough training give no assurance of employment?

In a paper read before the Massachusetts State Board of Agriculture last winter it was suggested by Mr. John Robinson that a United States School of Forestry should be organized and conducted on precisely the same principles as the United States Military Academy. Students should receive an allowance from Government just as the Cadets at West Point do. The course should be thorough, extending over a period of from five to eight years, and a permanent appointment in the Forest Service, with opportunity for promotion, should be given to each graduate. In no other way, so far as we know, can young men of intelligence and ambition be induced to devote themselves to the study of forestry as a profession. An assured and honorable position for life ought to prove an adequate attraction. And in no way can the Government be as certain of a Forest Service of a guaranteed quality and with a proper *esprit de corps* as when it educates its own officials and has the power to prescribe examinations for a commission as rigid as those at West Point.

Easter Flowers in New York.

A FEW years ago our churches were decorated at Easter with great numbers of "made pieces"—crosses chiefly—often of very large size; and their display in the shops on Saturdays attracted crowds of gazers. Now such pieces are scarcely ever ordered. The churches are decorated with growing flowers set against a background of palms, and with quantities of Sm lax and other vines. The fact certainly shows an improvement in taste; and it is also pleasant to note that Easter flowers are no longer sent to the churches only, but are very common as gifts to friends.

The sale was apparently large this year, but the flowers and plants themselves were by no means so good as in some former seasons. The florists explain this fact, however, by reference to the early date upon which the festival fell and the dark skies which have ruled for the past few weeks. The best things to be seen were, perhaps, the Lilies, which appeared in great quantities and in several

varieties—the finest being the tall, white Japan Lily. The florists' habit of removing the anthers from Lilies as soon as the buds open does indeed preserve the purity of the petals; but this gain is somewhat dearly purchased by the lack of their yellow accents when the flower unfolds. Next to the Lilies should be named the Canary Broom, which was grown—and very well grown—in much larger quantities than ever before. Acacias were also for sale, but not in large number. In two or three shops there was a comparative novelty in the shape of great sprays of purple Bourgainvillea. The European Bladder-Nut—a shrub with white flowers—had also not been so often seen in previous years. Lilacs were poor—nor are they ever so good in this country at this season as in Paris, where they are so admirably and profusely forced. Hydrangeas, on the other hand, were excellent and seemed to contest with Lilies the first place in popular favor. Azaleas were very poor—usually both small and badly grown. Spiræas and Deutzias were fairly good. In one shop at least there were a number of Mahernias, not very attractive to look at, but of delicious odor. Orchids, both cut and growing, were conspicuous, and in some cases very good. Daffodils could be had in quantities—not of the first quality—but no other variety of Narcissus. Lilies-of-the-Valley and Mignonette were abundant and excellent, Carnations abundant but not fine, and Roses by no means up to the standard of former years. Smilax was everywhere in quantities and excellent in quality.

Dangers threaten the Adirondack forests from every direction. On the 20th of March Mr. Hadley introduced into the Assembly, and, by the unanimous consent of that body, passed to a third reading, a bill authorizing the Commissioners of the Land Office to release and convey to Charles W. Durant, Jr., a tract of land on Racquette Lake one hundred and sixty acres in extent. This piece of land contains some of the most beautiful building sites in all the North Woods, and has a large market value. Mr. Durant entered and took possession of the land, and, without right or title to it, erected permanent, and, probably, expensive improvements, "in contemplation of purchase," the bill explains. Mr. Hadley's bill should be defeated, and Mr. Durant and every other person unlawfully occupying State forest-lands should be compelled to vacate them forthwith. The tract of land which Mr. Durant seeks to obtain by this piece of special legislation is situated within the forest-preserve. The forest-preserve was created and is maintained to protect the rivers and regulate the sanitary conditions of this State, and not to supply homes to wealthy citizens who may take a fancy to pass a few weeks in the woods during the summer months. We have already pointed out in an earlier issue the dangers that menace the forests through the probable enactment of a law giving the Forest Commission authority to lease parts of the preserve for building purposes. The fact that a bill authorizing the sale of a part of the forest to Mr. Durant can be hurried to a third reading in the Assembly without exciting public attention and alarm, shows how great the danger of giving such remarkable and unusual powers to the Commissioners really is. Every one who takes a lease of a piece of land in the forest and makes improvements on it, and then becomes dissatisfied with the terms of his lease, or is unable to renew it, or takes a fancy to own the land upon which he has built, will go to the Legislature to get authority to buy. And in nine cases out of ten the application, if it is backed with sufficient money, or political influence, or social standing, will succeed.

The Forest Commissioners are opposed, it is reported, to the passage of the Durant bill, although it is not apparent that they have taken any very active steps to defeat it or to warn the public of this new danger to the forests. Indeed, the favorite measure of the Commissioners, authorizing the lease of State lands for a term of years and with privilege of renewal, practically empowers them to do for a thousand squatters what this bill does for one.

Landscape Gardening as a Profession.

MUCH has been written of late with regard to the opening for young men of ability and taste in landscape gardening. While it is true that the need exists for men of artistic taste and skill in this profession, it is not so clear that there is sufficient encouragement for such men to enter it. The greatest need is for the education of public taste in garden matters, so that the demand for men of trained hand and a correct knowledge of beautiful forms and combinations of flower, shrub and tree may be created. So long as the public are satisfied with parks constructed by engineers, and with terraces and embankments like those of railways or fortifications, and are content to have their private grounds filled with meaningless "serpentine" walks, by some Irish laborer; so long as the denizens of our cities give annual employment to a crowd of peripatetic tree-butchers in lopping off the heads of beautiful trees, just so long will men of taste avoid a profession in which they would starve, while the ignorant pretender and the mathematical park-maker waxed fat. In one of our large Atlantic cities, a recently founded public institution stands at the junction of two wide avenues with ample grounds and grand old trees. The grounds were beautiful and natural before the erection of the institution, but it was thought necessary to "improve" them. And the improver went to work with transit and level, spade, pick and shovel, and he terraced the place on all its public sides with banks one above the other in diminishing perspective, building stone walls around trees from which he dug the earth, until now quite a respectable fort appears, and the passer-by involuntarily looks for the barrette guns on top. And yet the public think it beautiful, and the newspaper men praise the ingenuity in saving the trees. In all our wide and wealthy land the men of true skill in landscape art who meet with encouragement in their profession, can be almost counted on the fingers of one hand, while railroad engineers, architects and hod-carriers are the landscape gardeners for the masses. Political favoritism also operates largely against true landscape art. No matter how correctly some public ground may be designed by its projector, the mutations of politics surely bring in some pig-headed fellows, who either prevent the design being completed, or let some ignoramus spoil it. One has only to go to the public grounds in Washington to see plenty of such examples. The work of A. J. Downing is being allowed to grow into a jungle because no one has had backbone enough to cut away trees which Downing planted as "nurse" trees, while his design was growing. And in the grounds of the Agricultural Department, well laid out originally, and planted as an arboretum, a straight avenue of asphalt has been cut through the original design, and bordered by two lines of wretched Ginkgo trees, looking like foreign tramps in rags and tatters on dress-parade. So long as public taste demands that every little spot of greenery must have all the repose driven out of it by obtrusive beds of Coleus and Geraniums, and the construction of carpet-beds is considered the highest style of garden art, it will be hard to get young men of education and taste to enter into competition with the crowd which suffices for the public demand. Of course, there are exceptions to all this, for we have some good landscape gardeners, and some men who are employing them, but I fear that the few who do really good work can easily do all the good work called for.

HORTICOLA.

["Horticola" is certainly justified in feeling discontented and even indignant with the present condition in our country of public taste in regard to landscape gardening. It is only too true that natural beauty is often, desecrated and existent works of landscape art destroyed by ignorant remodeling, and that the engineer on the one hand or the laborer on the other, is often intrusted with work which demands an artist's eye and touch. We believe, however, that there has recently been an awakening of intelligent public interest in the subject. The fact seems

proved by many other signs as well as by those recently published articles in popular periodicals, referred to by "Horticola," which have stated our need for more professors of the art. The laws of supply and demand are not always easily followed in their working. It is hard to be sure whether "Horticola" is right in believing that so much gardening work in America is bad because we do not appreciate good work, or whether we are right in believing that it is bad largely because enough men cannot be found to do it well. Yet some evidence of the correctness of our belief would appear, we think, if the three or four most prominent landscape gardeners of the country were questioned with regard to their experience during the last ten years; we think they would unite in saying that they are much more busy to-day than they were ten years ago, and that their clients show a more intelligent interest in their labors. We think also that they would recommend their profession as a good one for young men to enter, who are willing to study it thoroughly and are possessed of the energy and enthusiasm necessary to win success in a career which demands practical common-sense united to artistic feeling; for, even though the demand for the services of such men is not nearly so great at this moment as it ought to be, yet by the time a student now commencing his education is ready to begin independent practice, it certainly will be much greater. Of this we feel sure, not only from indices found in the most recent history of the art of landscape gardening itself, but from the records of the development, during the past two decades, of American art in other directions and particularly in the direction of architecture.—ED.]

A Temple in Japan.

THE love of the Japanese for nature and their skill in horticulture are well known. But the high level of their attainments in the art of landscape gardening is, perhaps, less generally understood. From the witness of many travelers it seems to be indisputable that no other people has ever approached this art in so artistic a spirit, has so well known how to improve without disturbing the beauties of nature, or has so persistently and universally put such knowledge to use. Formal gardening effects are never desired in Japan—a fact which might be anticipated by any one who has studied Japanese art in any of its branches, since its very essence is a dislike for formality and symmetry, a love for the utmost variety in detail which can consist with unity of general effect. Japanese art in landscape gardening is pre-eminently the art which conceals art. Every foot of the ground in the more closely populated districts has been carefully tended and treated for many generations, yet there are few spots in which the traveler can decide how much is due to nature's work, how much to man's. Trees and shrubs and flowers, water, and even rocks are sedulously tended with an eye to the production of the highest possible degree of beauty, yet always in such a way that beauty shall seem to have come of itself. Even in the immediate neighborhood of Japanese buildings the same ideal is preserved, and as the architecture, compared with that of occidental countries, is of an unambitious kind, and as the material used for it is wood, the effect is always what we would call a rural, a picturesque effect.

The illustration of a Japanese temple herewith given may serve to give an idea of Japanese architecture in combination with landscape. The temple is placed so that those who visit it have an unobstructed view of the sea and of the beautiful line which the shore makes towards the right, while the precincts themselves are agreeably shaded by large trees, beneath which grass and flowering plants grow in natural profusion. It is needless to point out how picturesque, yet harmonious and graceful, are the forms of the trees—forms not more beautiful in themselves than appropriate as making a delicate frame for the distant stretch of sea. As has been said, it is impossible in Japan to tell in how far any beauty is due to nature, in how far to man. But we may safely conclude that the forms of these trees are not altogether natural—that they have been watched and directed year by year until the most desirable effect was produced and then carefully preserved in that effect. We may even feel sure that the round-headed tree in the far distance would not stand where it does

had it not been felt that its presence was fortunate as accenting the projection of the shore. Color always aids form in producing beauty in Japan. The temple here is painted red and has a roof of yellow thatch, and these tones, in contrast with the dark green of the surrounding trees and the brilliant blue of the sea, must give the spot extraordinary beauty.

Such a picture as this is well worth careful study by those who are meaning to build on the pine-grown coasts of New England. Scenes, the natural beauty of which is closely akin to the beauty of this temple-site, are very frequent there, and the utmost effort should be made by architects and owners, to preserve their charm, to build in such a way that the work of architecture will complete instead of hurting it.

Spring in Mobile.

IT was no later than the middle of February when the red and purple of Verbenas, Drummond's Phlox and Pansies brightened the beds where white Alyssums, Candytufts and Narcissus had already been blooming. Of woody plants the Chinese Cunninghamia, the purple Magnolia, the Laurestinus and the Mahonias were blooming early in the month, followed soon by the Mock Orange and Red-bud from more northern woods, and the Chicasa Plum, whose true home is probably two degrees further north and on the western bank of the Mississippi.

Towards the last days of the month the Loblolly Pine, the Liquidambar, the Hornbeam, and the Sweet-leaf (*Symplocos tinctoria*), one of the prettiest amongst the small evergreen trees of the South, were in bloom. The flowering of the Witch-hazel at this season is worthy of note. Clusters of apetalous, staminate flowers make their appearance in the axils of the leaf buds while still in their winter sleep. Not a single perfect flower was observed, which cover the branches late in the fall with their strap-shaped petals.

In the garden, the Banksian and Marechal Niel heralded the season of Roses by blooming in the first week of March. The dwarf Almond, and the interesting Texan Buckeye (*Ungnadia speciosa*), were by the 12th covered with flowers, while the Hybrid Rhododendrons in many varieties displayed their resplendent shades of purple and red. Azaleas, Rhododendrons and Kalmias were blooming in the forests by the middle of the month, and the swamps were brightened by the flowers of Wax Myrtle, of Andromeda and of the Parsley Haw.

Not to name a score of beautiful herbaceous plants and small trees blooming in the Pine-openings, I cannot pass by the southern Sloe (*Prunus umbellata*). This is one of our most striking trees, and its value for the adornment of park and lawn is not appreciated. At its full growth the trunk is from 8 to 10 inches in diameter, and the tree attains a height of over twenty feet. The massive limbs spread horizontally at a distance varying from 3 to 6 feet above the ground, producing numerous erectly spreading branches, which divide into a mass of densely crowded spiny branchlets, forming a dome-shaped head often over twenty-five feet through. In its season this is covered with snow-white flowers, which are succeeded by dense green foliage. The fruit is of the size of a cherry, deep purplish-blue in color, and used for making an excellent conserve.

Almost all of the ament bearing trees found in this section are now blooming. The Beech, the Cottonwoods, the Black Willow, the Swamp Ash and all the Oaks of the upland and lowland, are unfolding their foliage, while on our porches the Wistaria and Trumpet Honeysuckle are loaded with flowers.

March 26th, 1888.

Karl Mohr.

Foreign Correspondence.

London Letter.

ON March 13th the Royal Horticultural Society met for the last time in its old home, so long identified with the history of English Horticulture, and the occasion brought together a large gathering and an interesting exhibition.

Among the new things exhibited but few were officially approved. The most important plant to receive a first-class certificate was a newly introduced Bladderwort (*Utricularia rhyterophylla*), which will prove valuable for a stove or Orchid-house. In growth it resembles the white *U. montana* and the mauve-tinted *U. Endresii*, the leaves being long and narrow, but the flower spike is taller and more erect. The flowers, in shape so much like an Orchid as to deceive many persons, have

two petals, the broad one resembling a lip about an inch wide. The color is a bright purple, intensified by the rich blotch of orange yellow on the lip. It is a plant of singular beauty, and those who love Orchids must admire this Bladderwort. Fortunately it requires the same treatment as many Orchids, being best grown in a suspended basket in an intermediate house. It is a native of tropical South America. Sir Trevor Lawrence showed the specimen.

A new single white Violet, called The Bride, exhibited by James Veitch & Sons, also won a certificate. It flowers profusely, small plants showing masses of pure white and fragrant bloom. The large and abundant foliage indicates a plant of strong growth and of good promise for market purposes.

A modest little Rock-Saxifrage, with cushions of primrose yellow flowers, won the third certificate. It was named *S. Frederici-Augusti*, but it may prove identical with or a form of

Among a group of plants from Veitch's nursery were three indispensable kinds for the green-house in March. One was the Rhododendron Early Gem, a hybrid from the early flowering *R. Dauricum*, but very much superior in every way. The plants shown were only about a foot high, but were smothered with bloom, each flower being two inches across and of a rich violet purple. It has been known here for some years and is popular among gardeners, as it requires but little or no forcing, and a group of a dozen plants makes a fine effect.

Another early shrub was *Azalea altaclerensis*, an old variety raised at Highclere, the Earl of Carnarvon's estate in Berkshire, famous for the Rhododendrons and other hybrids raised a generation ago. This Azalea is similar to the well-known *A. Pontica*. The flowers are large, of a bright clear yellow borne in large clusters, and rendered most effective by the tender green of the new foliage. The third is the new *Boronia heterophylla*, a native of Australia, one of the so-called New Hol-



A Temple in Japan

S. luteo-purpurea. It is a charming little plant for an open rock garden, as it flowers profusely in defiance of frosts and snow, and so does *S. Burseriana*, which was shown beautifully by the same exhibitors, Paul & Son, of Cheshunt. Among other exhibits not certificated there was the new Rose, Lady Alice, a paler flowered sort than Lady Mary Fitzwilliam, one of Bennett's seedlings, from which it is a sport. The flowers are more globular, and the tint is a delicate blush, just a shade away from white. It is extremely floriferous; so much so, indeed, that, like its relative, it does not make growth enough for the nurserymen. Mr. Paul tells me that the plants he showed, a dozen in number, all with several fine flowers, were from a lot taken into a slightly heated house in December, where, for the past six weeks, they have been supplying cut blooms. A miniature Rose, called Red Pet, also new, was also exhibited from Cheshunt. The flowers are small, but abundant, and the color, a rosy crimson, is bright. Being very dwarf, it is well adapted for pots in the green-house in spring.

land plants. The plant most nearly resembling it is *B. elatior*, but this novelty is finer in every respect. The growth is slender, yet bushy; the flowers, like tiny bells, are of a brilliant carmine-crimson and hang on the erect branches so thickly as to obscure the narrow leaves. I consider it one of the finest green-house plants introduced for many years. If hard-wooded green-house plants find much favor in the United States, this should be remembered as one worth having.

Among the Orchids the most remarkable were the following: *Phajus tuberculatus superbus*, a truly superb variety, having larger flowers than those of the species and with broader and whiter sepals and a more richly colored lip. The new *Angraecum Sanderianum* was shown to perfection by Sir Trevor Lawrence, the plant having four spikes nearly a foot long of snow-white flowers, showing how wonderfully free it is in flowering. But the finest Orchid in the show was *Cryptopodium Saintlegerianum*, which much resembles the old plant named by Lindley *C. punctatum*. It bears a huge branched panicle of flowers, each

one and a half inches across, with yellow sepals and petals, heavily barred with brownish red and a lip of the same color but of a richer tint. It is extremely showy, and, I am told, is not a difficult plant to manage in an intermediate house. It was introduced from Brazil a few years ago by Horsman & Co. through a collector named St. Leger. There were numbers of other Orchids shown, including, of course, many new hybrid *Cypripediums*, for novelties in Lady's Slipper Orchids come nowadays as frequently as new *Pelargoniums* formerly did. Some of them might well be classed as Orchid rubbish, but quite worthy of notice was a specimen of *Dendrobium Wardianum*, fully four feet high by two and a half feet across, with each stout stem completely wreathed with bloom. Every Orchid grower knows that such a specimen requires a deal of skill to grow it, and a cultural commendation was justly accorded to the exhibitor.

Wm. Goldring.

New or Little Known Plants.

Cypripedium fasciculatum.*

WE have had occasion already to refer to the difference which often exists between the eastern and western representatives of the same genus. In *Cypripedium* we have another instance of the same kind, and one which tends to illustrate also how in some measure the flora of northern Europe and Asia and that of eastern North America including Mexico are more nearly related to each other than either is to the flora of California and the Pacific coast. All are familiar with our common eastern Lady's Slippers, which have for the most part leafy stems bearing one or two or rarely three flowers with a conspicuous and usually large white or purplish or bright yellow lip. None of these range as far west as the Rocky Mountains, in which, as in the broad interior region beyond, within the limits of the United States no species of the genus is found. The several Mexican species are of the same general character, with large flowers, as are also those of the temperate region of Europe and Asia.

On the Pacific coast there are four species, one of which is here figured. This, it will be noticed, is peculiar in its single pair of cauline leaves, and in its very small greenish flowers, which are usually several in number and somewhat clustered at the top of the stem. In its foliage it resembles the subarctic *C. guttatum* of Alaska and northeastern Siberia, which, however, has but a single and a rather larger flower. *C. fasciculatum* is found in the Cascade Mountains of Washington Territory and southward in the mountains to Lassen's Peak in California. Its lip is less than half an inch long, and the sepals and petals are not greatly longer. *C. Californicum*, of which a figure will be given in a future number, has a leafy stem with small flowers solitary in the axils of several of the upper leaves, and the greenish yellow sepals shorter than the lip. The remaining species, *C. montanum*, comes nearer to its eastern relatives in its long brownish sepals and petals, but the lip is small and the flowers are peculiar in being very fragrant.

S. W.

Aquilegia longissima.

REFERRING to the illustration and description of this Columbine, p. 31, let me say a word about it as a garden plant: It "was found first by Dr. Palmer in August, 1880, in the Cara-

**C. FASCICULATUM*, Kell.; Watson. Proc. Am. Acad. xvii. 380. Low (from 3 inches to a foot in height), the stem villous-pubescent and bearing a pair of ovate or broadly elliptical leaves; flowers one to four, approximate, shorter than the bracts; sepals and petals greenish, lanceolate, acuminate, six to ten lines long, the lower sepals united; lip depressed-ovate, four or five lines long, greenish-yellow with a brown-purple margin.

col Mountains, 21 miles southeast of Monclova, in the State of Coahuila."

Dr. Palmer secured herbarium specimens and seeds for the Botanic Garden, Harvard College. The seeds were given to me, and from them in the spring of 1881 I raised a few good plants; some of these were distributed among our correspondents at home and in Europe. During the first year the plants were grown in a cold-frame. In the spring of 1882,



Fig. 16.—*Cypripedium fasciculatum*.

leaving two plants in the frame, I set out the others in the rockery. All of them bloomed the following summer, coming into bloom about the end of July and continuing in flower till the end of September. A few were sent to correspondents, the others were wintered where they had been growing all summer; those in the rockery, having, in common with the other plants, a light mulching of tree leaves and sedge. In the following spring (1883) they were all alive and as healthy and fresh as *A. chrysantha* or any other species, and grew and

flowered the next summer in about the same style as they did the previous year.

It is a desirable garden plant because it is the latest blooming of all the known species, coming in when *A. chrysantha*, the next latest, is still in good flower, and continuing in blossom long after that species has ceased to bloom. It is less robust and less profuse than *A. chrysantha*, and its flowers are of a paler yellow shade and less showy. But its long slender spurs have a weird appearance and hang about the flower branches like strings of yellow Dodder. The spurs on the cultivated plants were from 3 to 6 inches in length and averaged about 4½ inches; indeed, they gave the impression that it was on account of their weight that the flowers "looked up" so much. None of the cultivated plants were ever known to produce any seed.

Since coming here I have been very anxious to obtain a plant of this strange Columbine, and with this end in view have sent to Cambridge, and also to all the correspondents to whom I had sent plants, and in all cases have been informed that the plants have died. It is now entirely lost to cultivation. But although in its native habitats "the known localities are not readily accessible," I hope we shall soon again have the pleasure of seeing it in our gardens.

In June, 1886, Dr. Asa Gray told me he had, two years before, given plants of it to Mrs. Pickering, of Harvard College Observatory, and that they had grown and flowered remarkably well with her. Mrs. Pickering is an enthusiastic and most successful grower of garden flowers and has a very select collection. I at once wrote to her, and she replied that her plants had died the previous winter. In a subsequent letter she gives me more particulars: "I tried one plant in the cold-frame, and transplanted the other in spring and fall. The one in the frame died first. The other was left out one winter and disappeared. The transplanted one did well for two summers, giving eight or ten flowers later than the other Columbines. The roots were so very long it was difficult to transplant it, but it did not seem to suffer materially in consequence. I liked the plant. The flowers were very showy in individual vases. But it was not as beautiful as *A. chrysantha*, the next in size, and which is to me the most beautiful of all the Columbines. I was sorry to fail with this Columbine, as I have never failed with Columbines before."

I feel assured that the plant is not very hardy, and should we get it again, it must be wintered in a frame. But if a perennial supply of seed be not obtained I fear we cannot keep it long after we do get it, for Columbines are not long-lived perennials, and propagation by means of division will be uncertain.

Glen Cove, Long Island.

Wm. Falconer.

Cultural Department.

Small Fruits for Home Use.

THE Strawberry that will prove equally good on all soils, and under all conditions, has not yet been produced, and probably never will be. The same is true of other fruits, which accounts for the conflicting opinions as to the merits of the various kinds. If earliness, profuse bearing and acidity are desirable, the wants of the grower would be supplied by Crescent, May King and Manchester. If he requires quality with earliness, Cumberland would be better. If quality is more important than earliness, Downing, Prince, Belmont or Bidwell would answer. If size and beauty are wanted, Jewell will furnish these, and a good quality as well, and so will Jersey Queen, with a higher degree of acidity and flavor. If extra size, and sweetness without high flavor, are more desirable than heavy cropping, they can be found in Sharpless or Davis; and so the list might be varied *ad infinitum*. Numbers of new varieties are constantly being produced and tested, but time is required to determine their relative merits for general planting. Those named are the leading kinds of established reputation, and from them all reasonable requirements for home use can be fully met.

It is not advisable for the inexperienced to confine his planting to one or two sorts, a half dozen would cover the season better, and if one or more should fail from want of congenial soil or other cause, the others would be more likely to supply the deficiency.

As the Strawberry supply draws to a close the Black Cap Raspberry begins, the Souhegan being among the earliest and best. Possibly the new Carman may prove a formidable competitor—it certainly will if it maintains the promise it made in its original home. The Gregg is the largest of the Black Caps so far tried, as well as the latest. It is less juicy and more

solid than the others named and the canes are not quite as hardy; otherwise Black Caps do not vary materially, and all are so seedy that they are often refused by persons of delicate organization, or perhaps disorganization is a better name for this weakness of digestion. The Shaffer is a dull purplish-red berry, of the Cap variety, of immense size, of fair quality and especially valuable for canning. It is the strongest grower of all and very productive. The Caroline, a salmon-yellow hybrid of the Cap and Antwerp, is a gem for family use. It is as early as Souhegan, and its delicate texture, fine flavor, immense productiveness and thorough hardiness make it a great favorite. The new Golden Queen may prove its equal, but it is difficult to imagine how it can be any better.

Of the red varieties the Early Prolific has always given me satisfaction for good size, earliness and productiveness; its quality is not of the best, but all earlier varieties are either too small, unproductive or inferior in quality. The Cuthbert is the most popular of the red varieties for home use; it is large, prolific and of good quality, of vigorous growth and suckers abundantly. The destruction of the superfluous plants in all of the red varieties is essential to the most satisfactory results. The Marlboro' and Montclair, though not so well known or widely disseminated, are quite as good for family use on soils adapted to their growth, being as large and sweeter in flavor. Here also adaptability to soil and freedom from disease must be considered. The various fungus-diseases attacking red Raspberries have not attracted the attention of mycologists to the extent they deserve, and we know little about them save their destructiveness.

Plants on rich soil and mulched in a dry time, are, I think, less liable to attacks of these fungi than those under opposite conditions. No two persons would agree on the same list of Raspberries, although the foregoing are the best of the most popular kinds for family use. The exacting amateur will demand the foreign sorts, which are not hardy in this climate without protection.

E. Williams.

Montclair, N. J.

The Kitchen Garden.

HERE, on Long Island, about the middle of April, we are sowing and planting all the hardy vegetables and preparing our ground for the tenderer crops. I endeavor to have all empty ground cleared, manured and dug in fall to lessen the spring work. Crops do better than in land freshly manured in spring. It is not necessary to fork over light or sandy land, that lies high and dry, in spring. The surface should be raked smooth with a wooden rake, and then lined off for sowing seed or setting out plants. But heavy land, or even light land that has lain under water during winter, should be forked over. Never put a plow, spade or fork into heavy land till it is dry and mellow. I begin working our high, sandy land about the end of March, and our deep, level garden soil about the second week in April; but we have a springy piece of ground, which, although thrown up in ridges over winter, is not fit for the spade till the end of May.

The kitchen gardens on private grounds are generally laid out and cut up into squares in such a fashion as to render the use of the plow in them impracticable; indeed, old-country gardeners, as a rule, have a prejudice against the plow in the kitchen garden. But no spade or fork can prepare and pulverize soil for crops as well as can the plow and harrow. True, by hand power we can crop our gardens closer than by horse power, but the saving in labor and time is immense. While it would be well to have a garden where Chives, Parsley, Radishes, herbs for seasoning, and such miscellaneous little things of which we need only a small quantity at a time, could be grown, we should try to have our heavy crops, as Corn, Potatoes, Cauliflower, Tomatoes, Beans, Peas and the like, in an open area, where we could use horse power.

And in preparing ground a common digging fork does far better work than the spade, and with less effort, and for leveling and smoothing ground a wooden toothed rake is better than an iron one.

It is only the vegetable garden, but try for an air of neatness about it. See that the beds are square and the drills straight. Do not use up open ground for Spinach, Lettuces, Radishes or other crops that can be slipped in between larger ones. Do not have a lot of unused ground at any time; put in something, if only Lettuces, Cabbages or Beans, to feed to the animals. After Spinach, Beans, Peas, Beets or anything else becomes too old for culinary purposes, clear them away at once. Do not put in more of a crop at a time than you will need; it is useless labor and expense. And especially look to this in spring; it is not a large quantity of any one thing we

should put in, but rather a small quantity repeated in successional sowings. This is true of Peas, Beans, Corn, Beets, Turnips, Spinach, Lettuces, Radishes and some others. But of Onions, Potatoes, Artichokes, Asparagus, Parsley and others that readily suggest themselves, we should now get in a full crop.

Transplanting.—Contrary to advice usually given, transplanting garden plants should always be done in clear, pleasant weather. It is a great mistake to select a rainy day for this important work. Plants should not be taken up, either for transplanting into the garden or for potting for the window garden, when the ground is wet. It is better to do this work when the soil is reasonably dry, so that it will drop entirely from the roots without injury to them. When the soil is wet and heavy much of it is sure to drop from the plant in

rain are in too great haste to get through, to do their work well.
C. L. A.

Begonia gracilis, var. Martiana.—Mr. Pringle's note (page 7) upon the native habitat of this favorite old green-house plant is highly interesting, for the information he gives of its being found so far north quite accounts for the fact that it can be grown here, in England, in cool houses, where the artificial heat is just enough to keep frost out. Not long since I saw a raised brick bed in an orchard-house, with no heating pipes, quite over-run with the scaly tubers of this beautiful plant, which in bloom in a large mass had a charming effect. Mr. Sereno Watson may be interested in knowing that it has by no means gone out of cultivation here, but that it is one of the most cherished of green-house Begonias. In the Royal Horticultural Society's garden at Chiswick, it was a few years ago

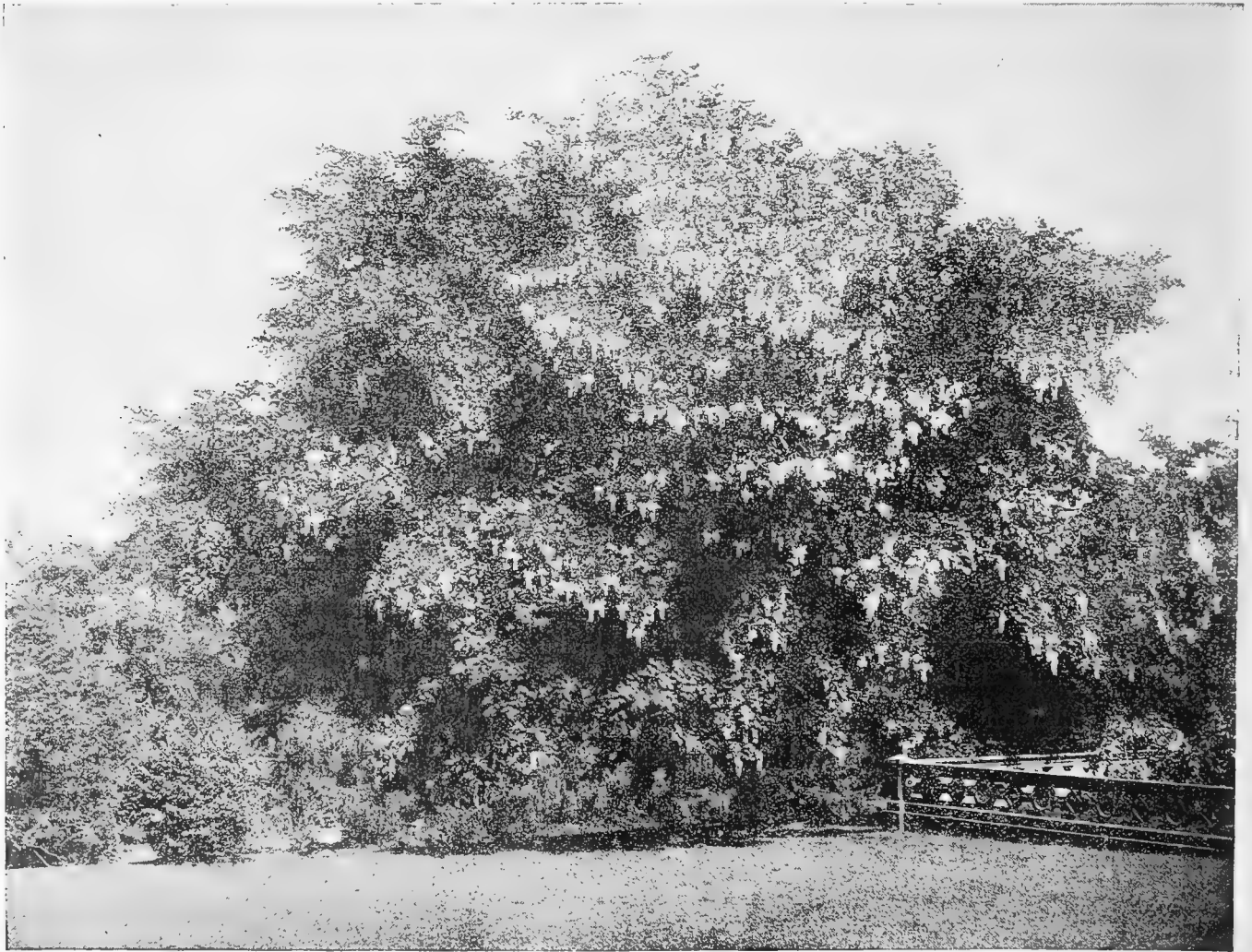


Fig. 17.—The Yellow wood.

taking up, and with the soil will go the delicate feeding roots, that will remain uninjured if the change is made when the soil is dry. Transplant in a clear, warm day, make a hole sufficiently large to hold the roots without crowding, fill with water, put in the plant, fill the hole with earth, which will immediately become soft mud, press this firmly around the plant, and cover the surface with perfectly dry, fine earth, and the plant will never flag or droop, no matter how sunny or warm the day may be. The writer has practiced this plan for years and has never lost a plant, not even the most delicate subject.

It may be urged that this is not practicable in large fields where Cabbage or Tomato plants are to be set. But the best way is always the most practical, and it is much cheaper to devote a day to putting out plants and have them all live and thrive, than to put them out in half the time and have a large portion die and the remainder linger along only half alive. It should be considered, too, that men who work out in the

grown to great perfection as a pot plant. Another variety of *B. gracilis*, named *diversifolia*, is also in cultivation at Kew and elsewhere.

Hardy Shrubs for Forcing.—To Mr. Falconer's list of shrubs (page 6), suitable for forcing into early flower, I should like to add a few, knowing that they are among the finest. The new *Prunus Pissardii*, or purple-leaved Plum, is the loveliest shrub imaginable when forced into early bloom, indeed it is naturally so precocious that it requires little or no artificial heat to bring out the flowers. Some bushes of it, four or five feet high, in the green-house at Kew, are mantled with white blossoms so profuse that the newly unfolded foliage is obscured. The flowers are about an inch across and have pink centres, while the new foliage, which at maturity is of a rich ruddy purple, is only slightly tinged with a vinous hue at flower time. This Plum may be lifted in autumn and potted for forcing, and taken into a slightly warmed green-house in February. Another first rate plant to force is Maule's Quince (*Pyrus*

Maulei), which has flowers like the common Japan Quince, but more orange in color—some call it orange red or orange scarlet. Small bushes of it, which are always very twiggy and spreading, have every shoot wreathed with bloom, which, in contrast to the pale green foliage, is admirable. This, too, requires very little forcing, but more than the purple-leaved Plum, because it naturally flowers later in the season. Waterer's Cherry (*Prunus Pseudo-Cerasus Watereri*) is matchless in its way when forced into bloom in March. The flowers are double and white, with just a suggestion of pink. A good plant of this in a conservatory or room lasts in bloom a long time, and in my opinion is very difficult to excel. *Forsythia suspensa*, and *F. Fortunei*, also force well, the plants hang like clouds of yellow bloom, if not unduly forced. The third week in March, onward, is not too early for them. W. G.

Consider the Lilies.—As soon as the weather will permit, and the ground becomes dry, examine Lilies planted in the fall, and where the frost has disturbed them make the soil firm by treading it down. All Lilies should be mulched in the fall, but if this was neglected it should be done at once. No better mulch can be used than equal parts of leaves and half-rotted chopped manure. It should be at least four inches deep. Such Lilies as *L. auratum*, *L. Wallacei*, *L. Leichtlini*, all forms of *L. speciosum*, and the species which flower after July, can be planted now with success, if it is done at once, and the bulbs are strong and plump. The top of the bulb should be three inches below the surface when the work is finished. Strong or green manure should not be used, rather plant with none; but if a compound of well-rotted manure and leaves can be had, use a spadeful for each bulb and mix it thoroughly with the soil. Plant firmly and mulch.

Peonies will be greatly benefited by a few forkfuls of manure placed around each plant. These gorgeous and easily cultivated flowers are fast growing in favor. Blooming as they do immediately after the first hint of summer weather, they should, in their season, hold as high a place in popular estimation as does the Chrysanthemum later in the year.

J. T.

The Yellow-wood.

OUR illustration on page 92 represents a specimen of the Yellow-wood which grows in a garden near Boston. This tree is about forty years planted, and is thirty-five feet high, with a spread of branches of nearly sixty feet. Botanists know the Yellow-wood as *Cladrastis tinctoria*. The generic name *Cladrastis* is of rather obscure derivation, but the specific name relates to the wood, which yields a clear yellow dye. Originally this tree was erroneously referred to the genus *Virgilia* as *V. lutea*, and by that name it is still best known, and more often spoken of by cultivators than as *Cladrastis*, the name *Virgilia* being now often used as an English word in speaking of this tree. The Yellow-wood is one of the rarest trees in the North American forests. It grows only in a few isolated localities from middle Kentucky and Tennessee to the extreme south-western portions of North Carolina; and is found on rich hill-sides and on steep rocky river-bluffs. It was discovered by the elder Michaux, the French botanist, during one of his last journeys into the territory west of the Alleghanies, and was introduced into Europe late in the last century. Few trees are more beautiful at all seasons of the year; and few adapt themselves more rapidly to varied conditions of soil and climate, or are more thoroughly satisfactory in cultivation. The trunk of the Yellow-wood often divides near the base, or throws out large low branches, and while this habit renders it particularly beautiful as a lawn or ornamental tree, as our illustration shows, it increases the danger of old specimens splitting in the fork or losing their branches. This often occurs owing to their brittleness; and this is the only drawback to this tree in cultivation which has yet appeared. It is very hardy as far north as New England and grows rapidly in all soils and situations; although, like other deciduous trees, it needs deep, rich soil to bring out its greatest beauties. No insects prey upon its dark green, graceful foliage; its beautiful, long, pendulous racemes of pure white fragrant flowers appear in June when most other trees have passed their blooming period; and the clear yellow tints of the autumn

foliage contrast pleasantly with the scarlets of Oaks and Maples. The Yellow-wood is a beautiful object in winter. The perfectly smooth, light-gray bark of its trunk and the delicacy of its branchlets recall the American Beech, which alone among our native trees excels it in these characters.

The wood of this tree has considerable value in addition to its value as a dye-wood, and if it could be obtained in sufficient quantities would find many uses. It is heavy and very hard, strong, close grained and susceptible of a good polish. Its color when first cut is bright, clear yellow, changing with exposure to light brown. At one time it was prized in Kentucky and Tennessee for gunstocks.

A second species of the genus *Cladrastis* is known (*C. Amurensis*), a small tree from Manchuria, with smooth brown bark and short spikes of small inconspicuous flowers. This tree is perfectly hardy in New England, where it flowers and ripens its fruit very freely. It is, however, inferior in every way to our American species as an ornamental tree, and is hardly worth cultivating except as a curiosity. C. S. S.

The Forest.

Influence of Undergrowth on the Increase of Timber.

WHILE we are talking of forestry as if it consisted simply in the planting of trees, or in preventing the lumberman from cutting wastefully, or in protecting the woods from fire, we are apt to overlook another much more positive and practicable object of forestry, which consists in making the most of our remaining natural growth, or in improving the young forest that nature provides after the virgin timber has been removed. In the Northwestern States especially there is a large area of second growth which is much inferior to what it might be, in kinds of timber, quality and fitness of crop. Here is where forestry should first be applied to fill out bare spots, to improve the crop, to make it grow more readily, to favor superior kinds, and so on. The whole theory of thinning should be carefully studied by holders of such forest property, for a dollar spent now in this direction may return manifold and earlier, than if nature is allowed to go on in her bungling ways.

While, theoretically, a tree with the full enjoyment of light would produce more leaves and therefore more wood than the one that is narrowed in by neighbors, on the other hand, the densely shaded soil offers more favorable conditions of growth than the open, bare or sodded ground. To balance these two factors of growth so as to produce an optimum is one object of forest management. The beneficial influence which undergrowth exerts upon the physical conditions of the forest soil, especially in preventing undue drying out by surface evaporation, is so well recognized, that the establishment of such undergrowth forms often an important part of forest management, for the beneficial influence upon the soil is naturally reflected in the prosperity of the principal growth.

The writer has seen a number of oaks some eighty years old which were left standing on a clearing to grow on for the next rotation, sickening and dying at the top. As soon as the young growth of hard wood underneath had covered up the foot of these oaks, they revived, recovered fully, and grew vigorously. Observance of these effects, of light on the crown and shade at the foot, has given rise to a management, by which, either a well grown forest is thinned out, leaving a certain number of trees to produce more quickly heavy sizes under the increased light influence and underplanting these for the purpose of preserving good soil conditions; or else, a naturally thin stand of trees may be so undergrown, in order to improve the production of the principal growth.

Such stands are not unfrequently found in Germany, where the villagers have tried to combine pasturage with tree-growth, mostly oak, by which the latter usually got the worst of it; the trees after a certain time showing no appreciable increase. The numerical result of this management may be seen from the following actual measurements.

In 1856 a stand of oaks then 130 years old, under which pasturage had been practiced, was thinned out and undergrown with beech, and last winter, thirty years after the operation, it was cut with the following results per acre:

a. Principal growth: 45 oaks, of 68 feet average height, yielding 3,320 cubic feet of solid wood, of which 2,082 cubic feet or 64 per cent. were over 6 inches in diameter, fit for

lumber or ties; the balance represents $13\frac{1}{2}$ cords of firewood, of which 45 per cent. was split wood. In addition 11 cords of inferior brush wood were utilized.

b. The undergrowth of course yielded only firewood, altogether at the rate of 14 cords per acre, of which only 20 per cent. was a better class of wood. The total yield of wood per acre was, therefore, 4,765 cubic feet.

Measurements of average trees were then made at the height of 1 meter, 3 meters, 5 meters and 6 meters with regard to accretion, and the average increase in the area of the transverse cut expressed in per cent. was found as follows:

During		During		
2nd	1st	1st	2nd	3rd
Decade Before Undergrowing.		Decade After Undergrowing.		
1.02	1.11	1.82	1.78	1.58

The mass accretion expressed in per cent. moved as follows:

0.98	1.00	1.82	1.44	1.53
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Now as the total cross section area—that is, the sum of the cross section areas of the forty-five oaks upon an acre—was found to be in the average 380 square feet, the absolute increase of this area in square feet during each decade was as follows:

3.88	4.22	6.92	6.76	6.00
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Similarly of the 3,320 cubic feet of wood found at the time of cutting, the following masses in cubic feet are to be credited to each decade:

32.54	33.20	60.42	47.81	50.8
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That is to say, as a consequence of the undergrowing there was visible a decided increase of wood production—2.70 square feet in cross section area and 27.22 cubic feet in mass; but this increased production was kept up during thirty years, so that the third decade furnished still 1.78 square feet and 17.6 cubic feet more than the decade before the undergrowing.

B. E. Fernow.

Professor H. M. Ward gives in *Nature* the following account of an experiment conducted by Professor Hartig:

"There is a plantation of Larches at Freising, near Munich, with young Beeches growing under the shade of the Larches. The latter are seventy years old, and are excellent trees in every way. About twenty years ago these Larches were deteriorating seriously, and were subsequently underplanted with Beech as foresters say—*i. e.*, Beech plants were introduced under the shade of the Larches. The recovery of the latter is remarkable, and dates from the period when the under-planting was made.

"The explanation is based on the observation that the fallen beech-leaves keep the soil covered, and protect it from being warmed too early in the spring by the heat of the sun's rays. This delays the spring growth of the Larches: their cambium is not awakened into renewed activity until three weeks or a month later than was previously the case, and hence they are not severely tried by the spring frosts, and the cambium is vigorously and continuously active from the first.

"But this is not all. The timber is much improved: the annual rings contain a smaller proportion of soft, light spring wood, and more of the desirable summer and autumn wood consisting of closely-packed, thick-walled elements. The explanation of this is that the spring growth is delayed until the weather and soil are warmer, and the young leaves in full activity; whence the cambium is better nourished from the first, and forms better tracheides throughout its whole active period."

Correspondence.

To the Editor of GARDEN AND FOREST,

Sir: I send you a short list of books and papers which influenced, or recorded, the beginnings of the modern art of landscape gardening.

The list is headed by Bacon's familiar Essay, in which some directions for the making of a wild garden are given; but long before Bacon there were plain signs of the coming of the day of naturalistic gardening. The poetry of Dante (1321) is full of sympathetic feeling for the beauty of the natural world—for meadows, woods, streams and flowers, even for the sea and the distant mountains. Petrarch, Boccaccio, Ariosto and Tasso betray no such fresh feeling for Nature as does their great predecessor. Yet in Tasso's "Jerusalem Delivered" (1595) is the following remarkable description of a garden scene:

"Everything that could be desired in gardens was presented to their eyes in one landscape, and yet without contradiction or confusion—flowers, fruits, water, sunny hills,

descending woods, retreats into corners and grottoes—and what put the last loveliness upon the scene was that the art which did it was nowhere discernible. You might have supposed (so exquisitely was the wild and the cultivated united) that all had somehow happened, not been contrived. It seemed to be the art of Nature herself, as though in a fit of playfulness she had imitated her imitator."—(Leigh Hunt's translation.)

But it was in England that the love of Nature took firmest root. Chaucer (1400) and Spenser (1599) sang of the things of nature with a very fresh delight; and Milton, in the fourth book of "Paradise Lost," imagined a garden which was an Eden indeed.

England also raised up Shakespeare, whose love embraced the

"daffodils
That come before the swallow dares, and take
The winds of March with beauty;"

and Cowley, whose delight was that characteristic one for an Englishman, "a small house and a large garden"; and, later, Thomson, Cowper, Gray, and Wordsworth.

Meanwhile the art of landscape painting had been growing up. Titian, its founder, composed the first landscapes upon canvas in the days when Tasso was imagining the garden of Armida; Claude Lorraine, Salvator Rosa and Poussin were contemporaries of John Milton.

Well might Wordsworth write (1805) to Sir George Beaumont: "Painters and poets have had the credit of being reckoned the fathers of English gardening"; and he adds, "they will also have, hereafter, the better praise of being fathers of a better taste."

"Bacon was the prophet, Milton the herald, of modern gardening; and Addison, Pope and Kent the champions of true taste"—thus the Rev. William Mason in 1772, when the sort of landscape-beauty long imagined by the poets was beginning to be realized in the English parks. Addison and Pope, each, in his few acres, practiced what he preached—Addison at Bilton near Rugby, Pope at Twickenham near London. Bridgeman, a professional gardener of the period, is said to have been converted by Pope's paper in the *Guardian*, and thenceforth to have abandoned the clipping of trees; while Kent, a painter, gave up his art to become the first landscape gardener.

The first complete treatise on the new art was Whateley's still indispensable "Observations," published in 1770, and immediately translated into French and German. A few years later appeared Girardin's excellent French work, and Hirschfeld's six volumes printed in German and French. Later came Gilpin's delightful accounts of his English tours, which had great influence in waking the popular interest in natural scenery, and Knight's and Price's vigorous attacks on the smooth monotony which characterized the landscape work of Brown and his imitators.

Shenstone, Whateley, Girardin, Walpole, Knight, Price and Laborde, all worked out their ideas on their own estates; and it is interesting to know that Rousseau, the contemporary of Gray, who yet was the first modern Continental author to write feelingly of natural scenery, was a frequent guest of Girardin's at his Ermenonville.

To close the list we have the writings of a few of the first landscape gardeners themselves—Repton and Loudon for England, Viart and Thouin for France, Sckell and Pückler-Muskau for Germany.

Mr. Editor, I hope to see printed in GARDEN AND FOREST numerous extracts chosen from these books. I am sure you can do us Americans no better service than thus to advance "the better praise" of the founders of the art and their principles. I am, sir, yours respectfully,

Boston, 1st March, 1888.

Charles Eliot.

A List of Books on Landscape Gardening.

1625. FRANCIS BACON, Lord Verulam.—"On Gardens," one of his "Essayes or Counsels Civill and Morall."
1712. JOSEPH ADDISON, essayist, Secretary of State.—"On the Causes of the Pleasures of the Imagination arising from the works of Nature, and their superiority over those of Art." In *The Spectator*, No. 414.—"A Description of a Garden in the Natural Style." In *The Spectator*, No. 477.
1713. ALEXANDER POPE, poet and essayist.—"On Verdant Sculpture." In *The Guardian*, No. 173.
1731. ———.—"An Epistle to the Right Honourable Richard, Earl of Burlington." London, fol.
1764. WILLIAM SHENSTONE, poet and essayist.—"Unconnected Thoughts on Gardening." In his collected works. London, 8vo.

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Periodical Literature.

THE first Lime Tree on the great avenue called *Unter den Linden*, in Berlin, was planted in 1680, the first house having been built three years before. The story of this first planting and of those which have since been made is told by Herr Rodenberg in the *Deutsche Rundschau* for November, 1887; and in subsequent numbers of the magazine he has outlined the history of the famous street which has witnessed so many striking political and social scenes.

The title of an article by Lord Fortescue in the March number of the *Nineteenth Century* will doubtless attract the eye of many who are interested in the development of a love for flowers among the poor. But upon examination "Poor Men's Gardens" proves to be simply a treatise upon the question, much discussed of late in England, of the advisability of letting to members of the laboring classes "allotments" of ground at a distance from their homes, by the cultivation of which they may add to the food supply of their families.

The great and ancient Forest of Fontainebleau has been made famous all over the world by the genius of the band of landscape painters who, in the last generation, devoted their lives to depicting its venerable Oaks, its heathly glades, its melancholy pools and its huge groups of moss-grown rocks. All who know and admire the pictures of Rousseau, and Diaz and Dupré, and of a host of later comers who have followed in their traces—and the number must be legion in America—will be interested to read an account of the Forest of Fontainebleau written by Mr. J. Penderel-Brodhurst and published in recent numbers of the *Magazine of Art*. And even to those whom no artistic magnet has attracted to this forest, these articles will be attractive; for by describing the scenes of humble life which, winter and summer, are busily enacted beneath the Oaks of Fontainebleau, the difference between what is meant in Europe by a forest and what is meant by one in America, is vividly set forth.

In *Chambers' Journal* for February will be found a brightly written, yet instructive article called "Early Blossoms." The chief flowers of which the author speaks are Snowdrops and Crocuses, giving us at some length the history of their introduction into European gardens, speaking especially of the species of Crocus which furnishes the saffron of commerce, and describing the singular vicissitudes of public favor and disfavor which this substance has undergone.

The *Popular Science Monthly* for April contains an attractive and instructive chapter on "Californian Dry Winter Flowers," by Professor Byron D. Halsted. It gives an account of observations made in the vicinities of Los Angeles and Santa Barbara in the winter of 1886-'87, when the rainy season was unusually late, and the plants which were in bloom had received no rain for nearly ten months. In view of this fact, it is surprising to read the long list of such plants—plants "which grow without irrigation, and blossom from the dust"—and to note how many of them belong to genera whose eastern representatives flourish only under very different conditions. Excluding the garden flowers of which, if he will but supply a little water, the Californian may have "the whole list in mid-winter," Professor Halsted pronounces the most attractive flowers he found to be those of the phlox-like *Gilia Californica*. "This shrub is two or three feet high, and grows upon dry hill-sides. The leaves are thickly set and villous, while the stems are terminated by clusters of rose or lilac-colored flowers an inch or more across the limb. The fragrance is indescribably rich when not too profuse." This plant is locally called the "Mountain Pink," and next to it in attractiveness, the author ranks the *Hosackia glabra*, of the order Leguminosæ, a shrub with long decumbent stems and yellow and brown flowers.

The most interesting article for lovers of nature in the recently completed eighty-third volume of the *Revue des Deux Mondes* is Monsieur Th. Bentzon's "Le Naturalisme aux Etats-Unis," the exact bearing of which is more clearly defined by the sub-title "La Bibliothèque du Plein Air." Monsieur Bentzon—who, by the way, is a lady, writing under an assumed name, with a special predilection for American literature—reviews in this article, at considerable length and with high praise, the volumes contained in Messrs. Houghton, Mifflin & Co.'s "Out-door Library"—the works of Thoreau and John Burroughs, Lowell's "My Garden Acquaintance," and Miss Jewett's "White Heron," and speaks incidentally of the Journals of Agassiz and his wife, and of poems and stories by many other hands. The genesis of this out-door literature is traced, no doubt with much reason, largely to the combined influence of Agassiz's teachings and of Emerson's "Nature," and its development is looked upon as the effect, less of the wish for scientific knowledge than of the desire, on the one hand, to give literary outlet to the "animal spirits" of a young and vigorous race, and, on the other, of the Emersonian wish to trace the relationship between the soul of man and the soul of nature. We ourselves hardly realize, perhaps, how strongly the love for nature is expressing itself in our current literature. It is doubly pleasant, therefore, to find the fact recognized

abroad, where the American people is too often believed to be wholly given over to money-making industries, and as entirely devoid of the contemplative as of the poetic gift. There is one author, however, whom one regrets to find missing from M. Bentzon's list—Miss Murfree (Charles Egbert Craddock), whose pictures of nature in the mountains of the south-west deserve to be ranked with our best out-door poems in prose.

An article on "An Old-Fashioned Garden" by Mrs. A. M. Crompton in *Harper's Young People* for March 27th, is of just the sort which should frequently be written for youthful readers. Not often will any one be able to realize just "The garden of my dreams" as this author describes it—for it is described as one "which must be at least a hundred years old," and in which, though successive owners may have worked many alterations, at least "the trees and turf must have the beauty of age." But a garden where beauty means growing things in natural development and not an assemblage of statues and fountains and stiff showy pattern beds, where "old-fashioned" sweet-scented flowers bloom in abundance and birds delight to gather, where vines and creeping plants are trained with "an art that conceals art," where fruit-trees, shade-trees, shrubs and annuals all have their place and purpose, and where winter may seem almost as beautiful as summer—such a garden as this very many more people might have than is to-day the case. And it is difficult to believe that a strong desire for it will not be inspired by this charming little article.

Notes.

Plants bearing exclusively what purport to be four-leaved Clovers—or, as the Germans call them, "luck Clovers"—are sold just now in pots in the flower markets of Germany. They are said, however, not to be true Clovers (*Trifolium*), but certain species of *Oxalis*, which regularly produce leaves with four leaflets—*O. oculenta*, *O. Deppei*, or *O. tetraphylla*.

Herr Max Leichtlin has commissioned Paul Tintenis to travel for him in Armenia in order to collect bulbs and seeds for cultivation in the famous Leichtlin gardens at Baden. An herbarium will also be collected, illustrative of the Flora of Armenia.

A great Fruit Exhibition will be held in Vienna during the coming autumn, with the object not only of displaying the pomological products of Austria, but of increasing, among cultivators and the public, a knowledge of the newest methods of cultivating, preserving and utilizing fruits.

The Royal Society of Agriculture and Botany will hold its twelfth annual international exhibition during the latter part of this month.

A Horticultural Congress will be held in Paris in May, in conjunction with the annual flower show of the National Horticultural Society.

The fiftieth anniversary of the founding of the Horticultural Society "Hortensia" will be celebrated in Munich in July.

The Philadelphia Flower Show.

THE Spring Exhibition at Philadelphia last week fully sustained, in the quality of the collection, the high reputation won by the Pennsylvania Horticultural Society during its long and successful career. The number of plants and flowers displayed was smaller than usual, but this relieved the managers from any temptation to crowd them, and the arrangement throughout was admirable. The centre piece, with a cone of *Asparagus tenuissimus* rising from a bank of rich flowers and foliage to the high ceiling, was tastefully conceived, and no single feature of it was more pleasing than the immense Fuchsia, six feet high, with its wealth of bloom. It was a general remark that exhibitors could in no way do more to render flower shows attractive than by displaying finely-developed specimens of plants that are well known and "common." For some reason Orchids have not been cultivated as largely in the neighborhood of Philadelphia as they have been in other parts of the country. The fine display of these plants was therefore a surprise. The group of fifty plants from the collection of Mr. W. S. Kimball, of Rochester, New York, was especially noteworthy, every plant being well grown and in fine flower. Good collections were also shown by Siebrecht & Wadley, of New York, and Charles Dissel, of Philadelphia. Of course the spring flowering bulbs were abundantly displayed, and the hall was bright with Rhododendrons and Azaleas. But Roses, next to the Orchids, attracted the most attention. The flowers of Mrs. John Laing were unusually fine, and this variety did not suffer by comparison with Madame

Gabriel Luizet as they were seen together. No better Brides were ever exhibited, and Niphetos was almost as good. A cluster of General Jacqueminots from Boston were admired for their unusual size and the luxuriance of their foliage. Besides the old favorites, a prize was awarded to a Tea Rose called, provisionally, The Gem. No one was able to tell whether it was an old variety, revived by chance, or a sport. But its size, form and solidity give it great value. It is not a pure white, but has a pleasing suggestion of the faintest cream color, and the growers present agreed that it was a Rose of the greatest promise.

Retail Flower Markets.

NEW YORK, April 13th.

The stock of cut flowers is very heavy; so heavy indeed that only the choicest blossoms bring anything like a satisfactory price. Trade is good on the chief thoroughfares, but is generally dull on East-side avenues. A few large weddings have brought orders for handsome designs for gifts, but the average demand is for flowers not selected. Paul Neyron and Baroness Rothschild Roses are particularly handsome. They bring 75 cts. each. Other hybrids of good quality cost 50 cts. Some very large La France Roses bring 60 cts. each. Catherine Mermets are poor, and Brides are showing considerable color on the outer petals. There is a glut of Callas and Harris's Lilies; the former are offered for 15 and 20 cts., and the latter for 25 and 30 cts. Lilac from New Jersey is very well grown and holds its price at 50 cts. a spray. Poet's Narcissus is scarce, and costs 50 cts. a dozen. Hyacinths, Tulips and Lilies-of-the-Valley cost from 60 to 75 cts. a dozen, according to quality. Very choice Lilies-of-the-Valley selected for bridal bunches, are sold for \$1 a dozen. Daffodils cost from 60 to 75 cts. a dozen. White Carnations are scarce, but those of other colors are plentiful and 50 cts. a dozen. Short-stemmed Carnations are sold for 30 cts. a dozen. Small Mignonette costs 25 cts. a dozen spikes. The large Spiral brings 10 cts., and the Giant holds at 15 cts. a spike. Forget-me-not of excellent quality appears, and costs 50 cts. a dozen sprays. Some Heliotrope of great beauty is in market, bringing 25 cts. a bunch. Other flowers, if of good quality, remain as last quoted. There is no price set upon the indifferent stock which gluts the market. It may be bought for any sum offered.

PHILADELPHIA, April 13th.

Roses are quite plentiful now, and the Hybrids are generally very fine. Magna Charta and Baroness Rothschilds are selling freely at from \$4 to \$6 per dozen. Mrs. John Laing is improving very much in quality, as also is Puritan and American Beauty. Amongst the Tea varieties, Madame Cuisin was in remarkable demand this week; one of the leading florists had difficulty in getting sufficient stock to fill his orders. It is a beautiful Rose, and not the least of its good qualities is the length of time it keeps in good condition. With brighter sunshine it becomes higher in color. Lilacs are still scarce, and much called for; very little is forced for cut blooms in the vicinity of this city. The beautiful single Daffodil is becoming more abundant, many coming from the warmer counties of New Jersey and Delaware. Some varieties of Carnations are improving in quality, notably Grace Wilder, a great favorite here. The delicate pink coloring is more decided than it is in the dark days of winter. It sells readily at from 50 cts. to 75 cts. per dozen. Buttercup is also very good, and in demand, selling at from 35 cts. to 50 cts. per dozen. Wedding breakfasts are growing in favor. Flowers are used on such occasions in great abundance.

BOSTON, April 13th.

On Monday last one of the leading dry goods firms created a sensation in the flower market by buying up all the Violets that could be obtained for that day and presenting them to their customers. The stock of Violets lasted only till noon, however, and the merchants were then obliged to fall back on Roses as a substitute, and the market was completely cleaned for once. A general adoption of this plan would not be unacceptable to the flower growers and flower dealers at present, for there is an overstock of flowers in almost every variety. Roses are particularly abundant yet, in spite of the low prices. Specially fine specimens of any popular variety still command customers at high figures. Some remarkable Jacqueminots bring \$4 to \$5 per dozen, and at the same time those of ordinary quality can be bought as low as \$1.50 per dozen, and a still lower grade is eagerly bought from the street boys at "three for a quarter." Catherine Mermets, Perles, Bennetts and Brides are all of first quality, and well worth the low price—about \$1.50 per dozen—asked for them. There is an abundance of Lilies-of-the-Valley, Tulips and Poet's Narcissus at \$1 per dozen. The yellow varieties of Narcissus are about gone for this season. Violets are 50 cts. per bunch and long-stemmed Carnations 50 cts. per dozen. White Lilies are still abundant in the market and they are used largely in the making up of funeral designs. Heath has disappeared completely, and but few Orchids are seen. Smilax continues very scarce and brings 50 cts. per yard readily. Some superb Hydrangea plants are to be seen in the florists' windows. These, with Canary Broom, "Longiflorum" Lilies and Cinerarias, are very popular as window plants this season. The Amaryllis is also growing in favor, and deservedly so, for it is easily grown and makes a striking display.

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The Forests on the National Domain.

THE forest-covered public domain of the United States is now, with some exceptions in the Gulf States, confined to those portions of the country west of the 100th meridian. These forests, where they come within the direct and immediate influence of the Pacific Ocean, are unsurpassed in the quantity and value of the material which they contain; in all other parts of Western America insufficient moisture has made them thin and stunted. Such as they are, however, the forests of the interior regions of the continent play an important and controlling part in the development of all that vast region, and influence the welfare of communities which now perhaps never give a thought to their existence. For, although often scattered, thin and stunted, they regulate the great rivers of the continent and so have an important bearing on the material welfare of a very considerable part of the American people. China within the last year has shown us only too plainly what a great river, deprived of the protecting influence of the forest at its source, can accomplish in death and desolation; and what has happened in China, will some day happen in America, if the forests which now guard the mountain slopes above the head-waters of the Columbia and the Missouri are sacrificed through the greed or the indifference of our people.

A large population is directly dependent, too, upon these western forests, for the water they store for irrigation, without which no agriculture is possible in nearly all that region, and for the lumber and fire-wood they yield.

They are forests, too, such is the want of moisture in all the interior of the continent, which have a hard struggle for existence; the resinous character of the trees and the dryness of the soil make fires exceptionally dangerous and destructive; and these conditions render the restoration of a forest once destroyed practically an impossibility. We mention these familiar facts to show the necessity of applying

to these forests the most careful methods of protection and administration which can be devised, both because they are in themselves of very great value, and because peculiar climatic and topographical conditions make it a much more difficult matter to protect and extend them than those in more favored parts of the country. They can never be secure in private hands; they may be preserved and even extended if the general government can be made to realize, what all other civilized nations now realize, that forests are essential to the public welfare, and that they can be safely managed for the good of all only by government administration. Individuals are not, and never can be, safe guardians of a forest upon which a community depends; and perhaps the most important question which at this time waits the action of Congress is such a settlement of the future of the public forests as will prevent individuals from securing title to any portion of them, or from unlawfully entering or devastating them. Other public questions can wait a few weeks or a few months without any very serious or at least fatal results, but when a forest of Fir or of Redwood on the Pacific Coast is swept away, there is destroyed what it will require five centuries to restore; and twice that time will not be enough to cover with trees again the slopes of Colorado or Nevada mountains devastated by fire. And yet while Congress year after year refuses to consider seriously the question of forest protection on the public domain, thousands of acres of these forests are destroyed every year by fires which might have been prevented, or by trespassers who might have been caught and punished.

Two bills relating to the public forests now await the action of Congress. House bill No. 7901 has already been favorably reported upon by the Committee on Public Lands. The provisions of this bill contain many dangerous elements, and cannot effect the protection of the forests. It provides that the fee of certain lands shall remain vested in the Government, but that the timber may be sold from these lands without restriction, and it provides no administrative machinery for the protection of the forests from fire, always their greatest danger. The use of the military, except perhaps at the very outset, and before proper officers can be trained as forest guardians for such regions as it may be deemed expedient to retain in forest, is hardly a practicable measure, or one which is likely to result in any practical good. The public interest demands that this bill should be defeated.

House bill No. 6045 was prepared under the auspices of the American Forestry Congress, and has the endorsement of many persons most actively and intelligently interested in preserving the forests of this country. It provides that permanent forest preserves shall be established under a forest officer and proper subordinates. They are to embrace lands better suited for forest growth than for any other purpose, especially lands situated at the head-waters of important streams; and they are to be kept in permanent forest and to be carefully guarded from spoliation and destruction. Timber, however, may be sold when it is clearly advantageous to do so, but only under the direction of a government officer, and with a proper regard to the future development of the forest. Unauthorized cutting, and other injury to the preserved forests are to be made criminally punishable. Forest guardians, and methods for their appointment, are provided for, and the not excessive appropriation of half a million dollars to carry out the provisions of the bill is asked for. This bill has much to commend it, and it would be fortunate for the American people if their feeling and intelligence were sufficiently aroused upon this subject to compel politicians to stop and consider a measure of such vital national importance in the year of a Presidential election. In this bill, however, no provision is made for the proper training and education of forest officers, and yet forest administration, however wisely the laws upon which it rests may have been drawn, must depend for ultimate success upon the intelligence and enthusiasm of the officers who direct it.

Mr. John Robinson, as has already been explained in an earlier issue of this paper, has very wisely suggested that we must first have a forest school in this country modeled on the plan of the Military Academy, before we can hope to have forest officers thoroughly trained in all the difficult technicalities of forest management, or an efficient forest administration. The men will appear, no doubt, to manage the forests, when the Government decides to protect them, and they will manage them badly at first, and then in time very well, but no general forest policy is complete or adequate to accomplish the ends in view without some provisions for training forest officers, any more than a law to establish a standing army could be complete without provisions for training its officers.

It is true that many investigations are yet to be made upon the position, the extent and the character of our western forests before enough is known about them to locate properly forest reserves, or to organize an effective system of forest administration; but some beginning must be made. If this measure fails it might be well if all friends of the forest would unite in an effort to secure from Congress the withdrawal of the whole forest-covered public domain from sale and entry, with adequate temporary measures for its strict protection, and the appointment of some competent body, selected for example from the National Academy of Sciences, to study the whole question in all its complex bearings and to recommend some comprehensive scheme of forest administration. There could be no opposition to such a bill except on the part of those who prey on the public forests. Such a measure might diminish at once many of the dangers which now threaten to exterminate the western forests, and it would cause the subject to be studied and discussed in a manner which would compel Congress eventually to establish a permanent forest administration in this country. But whatever method is adopted one thing is clear, that unless Congress does something and does it quickly, there will be very little forest left in western North America, and the future of all that part of the Continent will be irretrievably ruined.

Flowers in Winter.

THE skill of American gardeners in growing flowers for winter cutting, and the lavishness of the American public in buying them, strike every visitor to our large towns. In no other country are flowers—especially Roses—forced in such perfection or profusion, and in none are they used in such quantities, not only on all social occasions, but for the daily adornment of the drawing-room and dining-room.

It is hard to say whether our passion for cut flowers reveals a love for nature or simply a love for beauty in general. But it certainly is not, as some would have us believe, a mere fashionable craze, with no more respectable foundation than extravagance and the desire for display. Fashion's freaks do not last for generations, and grow stronger and stronger in their influence year by year. But our love for cut flowers in winter has thus lasted and grown. A few years ago fashion certainly played a large part in determining the uses to which we put such flowers. No lady was content to appear in a place of public amusement without an immense bunch of flowers in her belt, and few were content to take their afternoon stroll unless similarly adorned. The request that no flowers may be sent which even now often follows a funeral announcement in the papers—though not so often now as a few years since—is an unmistakable sign that a custom which, when not carried to excess, is among the most beautiful and touching of modern times, had been carried to excess—had become a fashion that was felt as a tax upon the friendship of the giver and a burden upon the conscience of the recipient. And so strong for a while was the feeling that a lady could not go to an opera or a ball without bearing costly tokens of the regard of her friends, that

young men of moderate means were almost driven out of social life and the florist's bill came to rival the tailor's as a synonym for one of the worst terrors of city existence.

But all these things have changed of late; and in the change we may read signs of our growth in a real love for flowers, as well as in good taste and refinement of feeling. For the florist's trade has certainly not suffered in consequence of the fact that we use flowers less for the purposes of a display than in years gone by. If we do not buy so many flowers to give away in a semi-obligatory manner, we buy more for ourselves; and if we do not carry them about so much in public, we care more to have them with us in our rooms. Many of us can remember when a lady often placed her baskets of flowers in her front window, between the curtains and the glass—sacrificing her own enjoyment so that every one else might know of her good fortune. Such vulgarities no longer offend the sight, but behind the curtains there are more flowers and lovelier ones than there ever were before.

The increase in the variety of flowers which we now force for winter use, and the simple character of many of them, also prove our advance in the right direction. Thirty years ago the Camellia ruled almost alone in our drawing-rooms. Then Roses began to come into favor, but they were as inferior to those of to-day in quality as they were in variety. It is scarcely twenty years since the most beautiful and fragrant of the other flowers we now demand were introduced into the winter trade—the Hyacinths and Lilies-of-the-Valley, the Daffodils and Narcissus and Tulips, which may now be bought any day in the winter for a few pence at any street corner, bringing into humble homes the loveliness which in former years was a luxury for the rich alone. The first bouquet of Lilies-of-the-Valley which was seen in a New York ball-room—some twenty years ago—was the talk of the town for days, and the florist who had grown the few sprays which composed it, and the young man who had bespoken them long in advance of their blooming, were looked upon as marvels of inventiveness and enterprise. These blossoms and their fellows had before that time been considered "common garden flowers," unworthy of a place in a florist's window or a lady's hand when winter made their acquisition difficult. But one experience of their charm among the time-honored favorites of the drawing-room, gained a place for them in popular affection, which has enlarged itself year by year. More recently other "common garden flowers" have likewise come to rank as winter favorites—Lilacs, for example, and the Mignonette, Forget-me-nots and Chrysanthemums; and we believe that even the growing fancy for Orchids—a fancy inspired as often by the fact that they are rare and singular, as by the fact that they are beautiful—will not drive into even temporary retreat the simpler, cheaper flowers, which prove that our love for natural beauty is a healthy and a steadily developing sentiment.

A Plantation for Winter.

THE value of some deciduous shrubs with regard to their winter beauty is hardly appreciated. We think much of the flowers and foliage of our shrubs, little of the brightness and persistency of their fruit, or of the color which their twigs retain when their leaves have fallen. Yet the number of such plants which are decorative throughout the whole or a part of the winter is considerable. The finest and most beautiful is the Cockspur Thorn, a small and graceful tree which can be used as the centre of a winter group. Its large dark-red fruit is borne in great profusion, and remains conspicuous in the winter landscape until the days of early spring. Among smaller plants the common Barberry is the most valuable for winter planting. Its habit is graceful and its drooping racemes of fruit are brilliant objects throughout the entire winter. Less pleasing in habit but with fruit equally persistent and even brighter in color is Thunberg's Japanese Barberry.

The common Privet, one of the hardiest and most easily cultivated of plants, carries in this climate its bright black fruit well into April. Several of our native Roses also retain their showy red haws until spring, especially the tall-growing Carolina Rose, and, among dwarfed species, *Rosa humilis*, *R. blanda* and *R. nitida*. The conspicuous fruit of our native Bitter-sweet—orange-colored and red—remains upon the plant all through the winter season, and its free habit of growth will add a welcome touch of variety to the group of shrubs among which it may be planted. The Japanese Rhodotypus is another winter fruit-plant, although its greatest beauty consists in its pure white flowers and neat foliage. And to this list of shrubs which do not lose their fruit until the days when fresh foliage is ready to replace them, may be added many others which retain theirs for at least a portion of the winter. The different Spindle-trees are striking objects in late autumn and early winter; but although their brilliant crimson fruit is persistent through winter, it becomes dull and inconspicuous by the end of the year. Few plants are more beautiful in autumn than the Highbush Cranberry (*Viburnum Opulus*) with its load of orange-scarlet fruit, but the birds devour this so greedily that little is left at Christmas-time. Every one knows the beauty of the Black Alder as it blazes through our northern swamps during the autumn months, and although a native of swamps it grows freely in any garden soil. If planted for the sake of its fruit care should be taken to secure plants of both sexes. Its scarlet fruit generally disappears by Christmas, but in his account, recently printed in these columns, of the effects of the great spring storm in New Jersey, Dr. Abbott speaks of seeing the Black Alder loaded with its fruit resting upon the dazzling drifts of March snow. The Snowberries, white and red-fruited, are beautiful in autumn, but they also lose their beauty later in the year.

And the winter shrubbery can be enriched by many plants conspicuous by reason of their bark. Scarlet-twigged Dogwoods, Golden-barked Willows, the Kerria with its shining yellow branchlets and many others may be grouped with fruit-bearing plants to produce an effect of striking and of lasting charm. All these plants are beautiful in spring and summer as well as in winter, and some of them are among the most desirable shrubs for summer-planting that we have. Therefore it need not be thought that in planting for winter beauty we should detract from our pleasure at other seasons of the year. All we need to do is, while planting for summer, to think a little of winter too. A little thought will enable us without any sacrifice in other directions to produce delicate combinations of form and color upon which the eye will rest with satisfaction throughout the long weeks of snow and cold. It is ignorance or indifference rather than necessity that has led us to rely so entirely upon dusky evergreen foliage in our efforts after winter beauty.

The death is announced of Jules Emile Planchon, the distinguished Professor of Botany at Montpellier, at the age of 65. Although a systematic botanist by training, Planchon's predilections were for horticultural and economic botany; and of late years he has devoted himself specially to the study of the Grape-vine, and of its greatest enemy, the Phylloxera. He was sent to this country by the French Government in 1873, to prosecute these investigations; and on his return to Montpellier he made an interesting and valuable report upon the subject. His last important publication is a monograph of the Grape-vines and the other plants of the Ampelopsis Family, in which some new North American genera and several new North American species are proposed. This, the latest contribution to the botanical literature of the Grape, occupies the second half of the fifth volume of DeCandolle's Continuation of his Prodomus, for which Planchon had written a monograph of the Elms, Hackberries and other genera of the Nettle Family.

A Curious Vegetable Growth on Animals.

IT is a well known fact that in certain diseases of the skin and hair which occur in man and mammals there are found fungi of rather a low grade of organization which by many of the medical profession are considered to be the cause of the diseases. In many of the lower animals, also, parasitic fungi are found, so that the discovery of a new fungus growing on animals would cause little surprise. But the case is different in respect to algæ, lower plants which, unlike fungi, have green coloring matter in their cells. In a few animals which are low down in the scale of existence green algæ are occasionally found, but, in such cases, the algæ are not usually considered to be parasites in the ordinary sense. The algæ and animals are assumed rather to be living together in what is called a state of commensalism—that is, the algæ furnish in some way food for the animals while the latter provide food for the algæ.

A curious case in which algæ seem to live as parasites on animals has recently been studied by Mme. A. Weber van Bosse. It is a fact known to zoologists for some years that the hairs of some of the species of sloths have a greenish color. It had been suspected and partly demonstrated that the green color was due to some plant growth. The researches of Mme. Weber van Bosse show conclusively that such is the case, and she describes minutely and figures the species found in the hairs of *Bradypus* and *Choloepus*. The algæ described belong to two genera—*Trichophilus*, in which the cells are grass-green and give out zoospores like many small algæ found in salt and fresh water and also on trunks and trees in wet places; and *Cyanoderma*, in which the cells are violet colored like some plants of the Nostoc family. The home of the sloths is the damp, shady forests of the tropics, and there we might expect such algæ to grow on animals of a sluggish habit, especially if they live among the damp foliage of the branches, as is the case with the sloths. But we should hardly expect that those animals confined in the zoological gardens of Europe would have their hairs covered by the same algæ. Such, however, appears to be the fact.

W. G. Farlow.

Last Year's Leaves.

AS I walked yesterday along a wooded hillside, over tree-margined fields, and skirted a swamp too wet, as yet, to thread, I noticed many a tree with last year's leaves still on it. Except one Tupelo, which usually drops its foliage earlier than our other forest trees, these leaf-bearers were all Oaks or Beeches. Thoreau speaks of the White Oaks about Concord retaining their leave as a rule, and others deny that this is true, or more than an occasional occurrence.

The conclusions derived from my own memoranda, covering many years, and of my ramble of yesterday particularly, are that not only the White Oak, but several other species, do retain their leaves, or a considerable percentage of them, until early in May of the next year. Take any Oak grove in this neighborhood, and I think it will be found, if the trees are not too crowded for healthy growth, that fully three-fourths of them retain from one-tenth to one-half of their leaves. But when we come to consider single trees, this habit of leaf retention will be found one of many curious features. For instance, I know of many single trees, both Oaks and Beeches, that have a single limb that will retain its foliage the winter through, while the other branches are bare from November to May. Again, a tree that stands upon the edge of a wood will hold its leaves on the open, light and airy side, and drop those that grew upon the shaded limbs. Does the greater vigor of the foliage upon the sunny side explain this?

In one of my upland fields there stands a thrifty Scarlet Oak, that is noticeable for the beauty and density of its foliage. In October the deep green becomes a rich maroon, and later, a lighter and brighter red, and not until

nearly New Year's has the ruddy tinting given way to brown. Even then the tree remains a prominent object, and is, indeed, even for an Oak, one among a thousand. For the past fourteen years this tree has never failed to retain nearly all its leaves, although in that time there has been every variety of summer and winter that even the powers in charge of our capricious climate could invent.

On examination of the Oaks near by, it has seemed to me that they all have a tendency to retain their leaves, and the measure of success in each case is due principally to the exposure of the tree and its general vigor. Here I may be wholly at sea, and only too glad to be informed correctly, if in error.

What I have said of Oaks applies equally to the Beech. Given shelter from the north-west winds and average vigor, and many a leaf will cling to its parent stem, until the swelling leaf buds of the new year shall crowd it from its place.

While yet the drifts of the late great snow storm still lingered, it was a pleasant feature of the landscape to see the sapling Beeches still bearing aloft their last year's leaves, dimly glittering like wrinkled fragments of old gold, and filling the air with a bell-like tinkle, soothing and soft as the twitter of a bird.

I offer it as a hint to the landscape gardener, to bring about by selection, if it can be done, a fully established habit of leaf retention; not making evergreen Oaks, but winter-long, bright brown Oaks; for such now lessen, to a marked degree, the dreariness of many a winter outlook. Again, when leaf retaining Oaks are mingled with Evergreens, there is an added charm to the scene. Think for a moment of such a cluster as this: A background of Cedar, scattered Oaks with dark brown leaves, a Beech with golden foliage, and crimson-fruited Black Alder mingled through it all. This may be readily brought about, for I saw it yesterday, where Nature had, without man's aid or interference, made thus beautiful the corner of a long neglected field.

Charles C. Abbott.

Near Trenton, New Jersey, April 5th, 1888.

How the Mangrove Forms Islands.

AMONG the agencies that have helped to build up the peninsula of Florida may be numbered certain trees which are fitted by nature to grow on lands that are more or less under water and that are too unsubstantial to support other forms of vegetation. Like the coral builders, they work so slowly that in a single century no great change is accomplished, but in thousands of centuries the changes wrought are very great. The most important of these tree-workers are the Mangrove and the Cypress. The former grows on shores and shoals that are overflowed generally by salt tide-water; the latter in localities that are overflowed at times by fresh water. Both have similar obstacles to overcome and they accomplish by this very different means.

The Red Mangrove (*Rhizophora Mangle*) covers hundreds of square miles of the southern shores of Florida, the principal areas occupied by it being the shoals lying between the keys and the mainland—which are composed of calcareous sediment—and the low southern and western borders of the Everglades. In these localities and on tide-washed islands as far north as latitude 29°, it forms a dense thicket of vivid green, rising uniformly from high-water-level, unchanged by seasons, unaffected by hurricanes, insidiously encroaching on the domain of waters and helping build what in future ages will be dry land. Far in the interior, even on the northern border of the State, are found beds of calcareous sedimentary rock which may once have supported just such thickets of Mangrove.

In places on the mainland shores the Mangrove attains to tree-like dimensions, forming a tall trunk sometimes two feet in diameter. Like the Cypress, the Mangrove is provided with strong buttresses at the base, but these differ from those of the Cypress in being of the style called by

architects "flying" buttresses. Starting from the trunk a yard or two from its base, they descend in graceful curves, sending off branches, from which other branches proceed, all descending in similar curves to the muddy ground, over which the tides spread twice a day. These basal branches serve the double purpose of props and feeders. From the upper branches, aerial roots descend till they reach the water at high tide. Sometimes a tree may be seen entirely dead except as to one branch, which is kept green by sucking up water through an aerial root perhaps twenty feet long.

Another special provision for its environment is seen in the seed of the Mangrove. This, before falling from the branch, develops into a miniature trunk from six to twelve inches long. The basal end being the heaviest, it is most likely to strike the muddy surface first and to stick there in an erect position. The rootlets and seed-leaves being ready to push forth, the young plant makes a rapid growth and soon becomes well rooted and propped in its rather insecure position.

As the Mangrove usually grows, rising scarcely ten feet from the water and spreading laterally, the main stem is of little importance. Innumerable roots descend from and support the leafy branches, repeatedly forking in their descent and forming a sort of basket work below high-water-level. Floating objects become lodged in these natural weirs, shell-fish and other marine creatures multiply in them, and the submerged stems give support to sea-weeds and hydroids. In some localities the roots become encased with oyster-shells, and this, probably, is the origin of many of the oyster-bars that obstruct some of the lagoons or so-called rivers of southern Florida.

The Mangrove thickets in the course of time build up a foundation for other species. Of these none have a peculiar habit of growth, except the Black Mangrove (*Avicennia nitida*). This tree is remarkable as to foliage, fruit, wood, bark and roots. The surface-roots send upward innumerable short feeders, black, lithe and rising about a span above the surface. This function, evidently, is to draw nutriment from the water at high tide, and, like the knees of the Cypress, they add to the surface accumulations, which, from age to age, add to the elevation of the land. In this respect, however, neither of these trees equals the Red Mangrove.

The wood of the Red Mangrove sinks in water and is not attacked by marine worms. Hence, fallen branches and trunks remain where they fall, while material that floats in with the tide is detained by the network of basal branches. It is altogether probable that the thousands of tree-covered "islands" in the Everglades and Big Cypress were once Mangrove thickets and that the present Mangrove islands will in time be added to the mainland. As soon as they are elevated above the overflow of the tides, the Mangroves will give place to species that require only brackish soil, which, in turn, will be replaced by fresh water or inland forms of vegetation.

Jacksonville, Fla.

A. H. Curtiss.

Certain Cone-Eating Insects.

THE cases here mentioned are the only ones known to us where the cones of Spruce and Pines have been attacked by insects. It is well known that the Spruce bud louse (*Adelges abieticolens*) deforms the terminal shoots of the Spruce, producing large swellings, which would be readily mistaken for the cones of the same tree. Another species of bud louse (*Adelges abietis* Linn.), which appears to be the same as the European insect of that name, we observed several years since (August, 1881), in considerable numbers, on the Norway Spruces on the grounds of the Peabody Academy of Sciences at Salem. A species of caterpillar (*Pinipestis reniculella* Grote), was observed August 24th, in considerable numbers, on a young Spruce ten to twenty feet in height at Merepoint, on Casco Bay, Maine. The cones on the terminal shoot, as well as the lateral

upper branches, which, when healthy and unaffected, were purplish green and about one and one-quarter inches long, were, for the most part, mined by a rather large Phycid caterpillar. The worm was of the usual shape and color, especially resembling a Phycid caterpillar not uncommon in certain seasons on the twigs of the Pitch Pine, on which it produces large unsightly masses of castings within which the worms hide.

The Spruce cone worm is usually confined to the young cones, into which it bores and mines in different directions, eating galleries passing partly around the interior, separating the scales from the axis of the cones (Fig. 18). After mining one cone the caterpillar passes into an adjoining one, spinning a rude silken passage connecting the two cones. Sometimes a bunch of three or four cones are tied together with silken strands; while the castings or excrement thrown out of the holes form a large, conspicuous light mass, sometimes half as large as one's fist, out of which the tips of the cones are seen to project (Fig. 19). Besides these unsightly masses of castings, the presence of

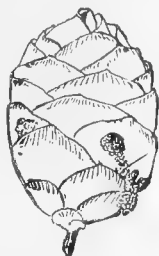


Fig. 18.—Single Pierced Cone.

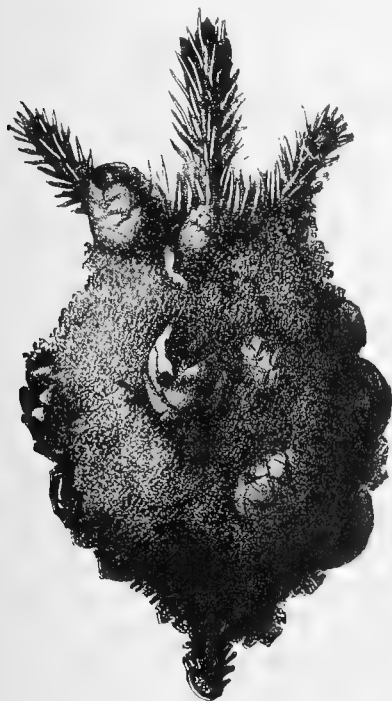


Fig. 19.—Mass of Infested Cones.

the caterpillars causes an exudation of pitch, which clings in large drops or tears to the outside of the adjacent more or less healthy cones. Where much affected the young cones turn brown and sere.

The same worms had also attacked the terminal branches and twigs of the same tree, eating off the leaves and leaving a mass of excrement on one side of the twig, within which they had spun a silken gallery in which the worm lived.

On removing the bunches of diseased cones to Providence, one caterpillar transformed in a warm chamber into a moth, which appeared the end of October; its metamorphosis was

probably accelerated by the unusually warm autumnal weather then prevailing. All the others had, by the 1st of November, spun within the mass of castings a loose, thin, but firm, oval cocoon, about half an inch long and a quarter inch wide, but the larvæ had not yet begun to change to chrysalids. Whether in a state of nature they winter over in the larval state within their cocoons, or, as is more likely, change to pupæ in the autumn, appearing as moths by the end of spring, remains to be seen.

I only found one tree next to my house thus affected by this worm. In 1887 the tree was not so seriously affected, though its general appearance had not much improved. It is probable that in a dense Spruce growth the trees would be less exposed to the attacks of what may prove a serious enemy of shade Spruces. The obvious remedy is, to burn the affected cones and mass of castings late in summer.



Fig. 20.—Spruce Cone-worm (enlarged).

The foregoing account has been taken from our fourth report on insects injurious to forest and shade trees, in Bulletin No. 13 of the U. S. Department of Agriculture, Division of Entomology, to which we are indebted for the accompanying illustrations, drawn by the artist of the Division, Miss L. Sullivan.

Another cone-eating insect is a bark beetle, *Dryocates affaber*. We have found this beetle in great abundance mining the bark of the Spruce, near the timber line on Gray's Peak, Colorado; it occurs, however, throughout the northern States. Mr. W. H. Harrington, of Ottawa, Canada, sent us, in December last, a specimen of this beetle (Fig. 21), which he doubtfully referred to this species, and which we find is identical with our Colorado examples. He has given us the following account of its habits: "The cones of the Pitch Pine were found to be, during the past season (1887), frequently inhabited by this bark borer,

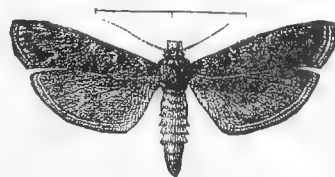


Fig. 21.—Moth of Spruce Cone-worm (enlarged).

both beetle and larva. Their attacks were readily noticed by the small aborted cones. The terminal shoots of the branches seemed also sometimes infested by the same beetle. It seems larger than a beetle which I found a few years ago boring into the terminal shoots of the White Pine, and which you determined as *D. affaber*."

A. S. Packard.

Foreign Correspondence.

The Kew Arboretum.—III.

BEFORE entering into a detailed account of the more important genera in the Kew Arboretum, it may be well to give a few particulars about some of the finer specimens, and a note or two concerning the history of others.

A fine Persimmon (*Diospyros Virginiana*) near the Temple of the Sun is one of the original denizens of the Old Arboretum, and was presented with many other rare and curious trees by the Duke of Argyle to George III; it is a handsome plant—apparently as happy as in its native habitat—and measures upwards of 60 feet in height, the trunk girthing 5 ft. 4 in. at a yard from the ground; the head has a spread of about 30 feet.

A conspicuous object at the present time (March) is a fine specimen of the Constantinople Hazel (*Corylus Colurna*) laden with catkins; it has a spreading head 44 feet across, is 35 feet in height, and the stem measures 4 ft. 3 in. in girth at three feet from the ground. According to Loudon this species was introduced to Britain in 1665; the following memorandum from "Hortus Collinsonianus" is worth reproducing. "The Turkey Nut, in the Mill Hill Garden, is very remarkable from all others, for the husk rises high, and branches out every way, and covers the nut. This is a remarkable acquisition, for the Captain that brought them from Turkey, eating them in a drinking room, one of them dropped into the crack of a rotten window board, where it took root; my gardening friend Mr. Bennett, coming there and seeing it, transplanted it to his garden, from whence our tree was a layer, and brought here anno 1756."

The history of the first introduced plants of the Chili Pine (*Araucaria imbricata*) is as follows. Towards the very close of the eighteenth century the officers of the Vancouver Expedition were at a dinner given in their honor by the Viceroy of Chili. Menzies, the surgeon and naturalist attached to the Survey, noticing that part of the desert consisted of nuts which were new to him, obtained a few which he planted in a box of earth on board his ship. Several germinated and five plants were safely deposited at Kew. These were grown under glass for many years, and the old Kew plant—perhaps the only survivor—even after being planted in its present position, was protected

by a wooden structure for many successive winters. Far more handsome specimens are to be met with than this—which dates from 1796—but its historical associations make it worthy of mention. It measures 34 feet in height and has a spreading round head quite similar in outline to those sketched in their native forests by Miss North; the stem is 3 feet 10 in. in girth at three feet from the ground.

The large *Sophora Japonica* near the newly constructed rockery for hardy Ferns is not only one of the original occupants of Aiton's Arboretum, but it is one of the three or four plants first introduced into Britain. It flowers profusely every year, but never seeds; although perfectly hardy our summers are not hot enough for pods to be developed. (In northern France do the same remarks apply. During a continental trip last August I saw no pods until I had got well into the southern districts beyond the Loire.) The Kew plant is about 50 feet in height, with a stem 13 ft. 6 in. in girth; it divides into numerous massive branches at about the height of a man and some of these are bound together by strong iron chains—the head has a spread of

when young. Possessing these advantages, it is not surprising to find that it is now being largely planted in many places.

Ginkgo biloba, the tree formerly only known in gardens as *Salisburya adiantifolia*, or the Maidenhair tree, is perfectly hardy at Kew and grows freely. Our largest specimen is upwards of 56 feet in height, with a head 42 feet in diameter, and a trunk 9 feet in girth at a yard from the ground. Formerly this specimen was trained against a wall like a fruit tree, but the building being removed the tree was left, and the side branches cut away. This tree, too, like many others which flourish well at Kew, does not flower, although it is on record that when enjoying the shelter of the wall it did produce male catkins.

The largest of the Turkey Oaks (*Quercus Cerris*) in the Kew Arboretum, is one growing near the Temple of the Sun. This was also presented by the Duke of Argyle. It is a noble specimen 85 feet in height, the spreading head being 96 feet through, and the trunk 15 feet 6 inches in circumference a yard above the ground. As a timber tree, in

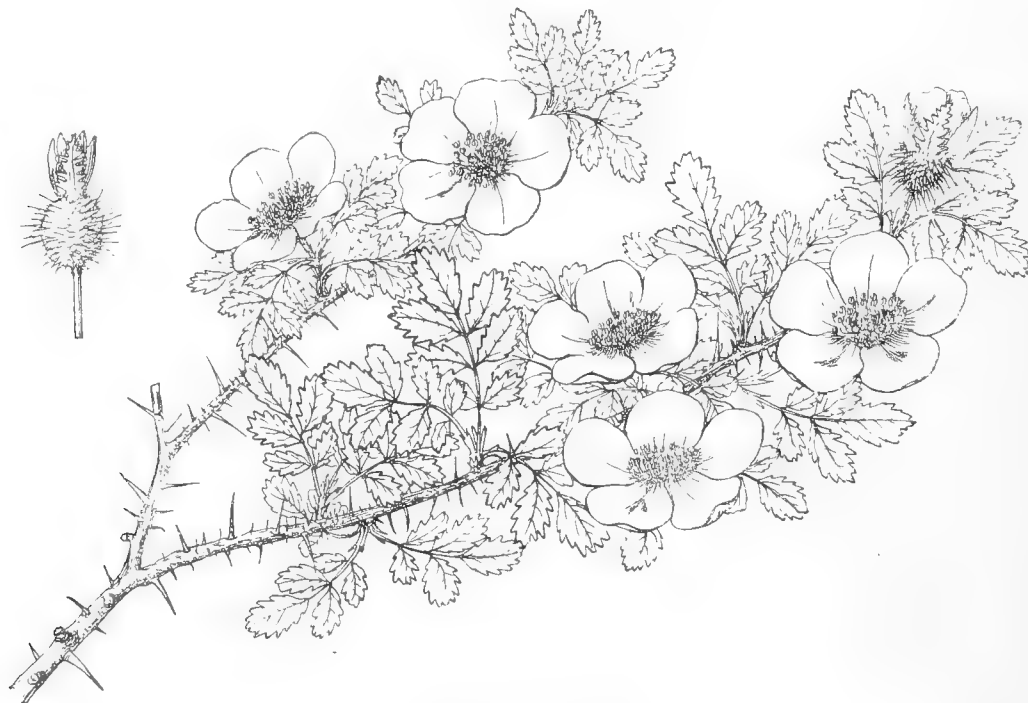


Fig. 22.—*Rosa minutifolia*.

about 75 feet. Some other specimens at Kew are almost equally fine, and one, planted in a wood, where it had been prevented from developing too much laterally, has a fine clear stem of thirty or forty feet.

Not far from the *Sophora* just described is probably the finest Hop Hornbeam in the British Isles. This is not the Hop Hornbeam or Iron-wood of the north-eastern United States, but its European representative (*Ostrya carpinifolia*), and, in my opinion, a more ornamental species than the American plant. It is 50 feet in height, with a trunk 9½ feet in girth and a spreading head of upwards of 70 feet wide. This, although it is annually laden with its curious hop-like catkins, does not ripen seed at Kew.

The Corsican Pine (*Pinus Laricio*) near the Grand Entrance is a remarkably fine example of the species, and, moreover, has an interesting history. After peace had been proclaimed in 1815, it was brought to England by the botanist Salisbury. It was then a small plant, about six inches high, in a pot; the measurements now are: height 90 feet (several feet have been broken off the top by snow storms during the last dozen years); spread, 60 feet; girth of trunk at 4 feet from the ground, 9 feet. *P. Laricio* is a valuable timber tree, a fast grower, and stands the rough sea breezes well, besides being almost proof against game

Britain at any rate, this species is not of much value, but the South African forest authorities are planting it largely. The great importance of growing belts of Oak in the South African forests is that they are trees which by their dense shade keep down the grass, the burning of which does so much damage to the forests every winter. The Turkey Oak being better adapted to the climate of South Africa than the common Oak (*Quercus pedunculata*), its extended propagation is, according to the Conservator of Forests stationed at King Williamstown, of the first importance.

Royal Gardens, Kew.

Geo. Nicholson.

New or Little Known Plants.

Rosa minutifolia.*

OUR wild Roses have an ill reputation among botanists for the uncertainty which often attends the determination of their species. But there are some, fortunately, about which there can be no doubt, and we have

**R. MINUTIFOLIA*, Engelm. in Bull. Torr. Club, ix, 97. Of dense growth, 2 to 4 feet high, pubescent, with numerous scattered terete straight or slightly curved spines; leaves small, with narrow stipules, the leaflets 5, round to lanceolate, 1 to 5 lines long, incised-dentate; flowers an inch broad or less, pink or white, solitary on short tomentose peduncles terminating very short branchlets; receptacle globose, densely setose-hispid, the calyx-segments cleft, persistent; styles distinct.

here given the figure of one which carries its distinctive characteristics obtrusively to the front, and cannot be mistaken. Not only is there no other American Rose like it, but it stands alone in the genus, forming M. Crepin's section, *Minutifoliae*. Its compact habit, its very small and deeply toothed leaflets, and its small, solitary flowers almost sessile upon the short branchlets, together make it a very distinct species.

As might be expected, this Rose belongs to the flora of the Pacific coast. It has been found only on the peninsula of Lower California, near All Saints (Todos Santos) Bay, about 40 miles south of San Diego, where it was discovered in 1882, forming low, dense thickets upon the dry hillsides bordering the shore. It is a much-branched, compact shrub, armed with numerous stout, straight spines, the small leaves often fascicled, and with numerous pink or white flowers along the branches. The globular base of the calyx is covered densely with short bristles. Evidently the flower in its wild state cannot be commended as well suited to the florist's needs, but from its habit of growth the plant may well prove a decided ornament to the lawn and garden in our more southern States, where it would doubtless be hardy. S. W.

Cultural Department.

A Selection of Lilies.

THE selection of varieties is an individual work to be settled by the grower in accordance with his personal taste and the amount of space and money he has at command.

For a garden of moderate size the twelve species and varieties named below would well represent the whole family and furnish continued bloom from June until September.

Lilium auratum, the golden-banded Lily of Japan, is one eagerly sought, because of its large, showy flowers. As a garden flower it has few equals, if magnificent display is the object sought. As a cut flower for house decoration it is the least desirable of any of the family. It is too large to arrange with others, with a due regard for harmony of form and color, and the fragrance it exhales is truly sickening. Of this species there are many garden varieties, differing only in the markings. In some the golden band gives place to one of bright crimson, which for a day is showy, but the crimson soon fades into a dirty brown and the beauty of the flower vanishes. None of these varieties equal the original type. This is usually considered a difficult subject to manage. Choose the smallest bulbs, those that are heavy and firm, plant deeply, say eight inches, in the driest part of the border, in partial shade, and the bulbs will last a number of years.

L. elegans is sold in many forms under the name of *L. Umbellatum*, and its varieties, *atrosanguineum*, *fulgens*, etc. Orange is the predominating color, with various shades; a few are deep crimson and quite showy; some are a clear citron in color; some are self-colored, others deeply spotted. Alice Wilson, a variety of recent introduction, is decidedly the best of its class. The flower is perfect in form, with petals broad, full and gracefully curved. Its color is a clear, lemon-yellow, deepening towards the centre of the flower to a rich golden yellow. The class is valuable, because of earliness, hardiness, and profusion of bloom. A large clump makes a magnificent display. The flowers are generally too coarse for table or parlor decoration.

L. Brownii, which is also known as *L. Japonicum*, a native of China, is remarkable for its long trumpet-shaped flowers, ivory-white inside, and dark purple on the outside. This is usually regarded a tender Lily, and is not much grown because of its liability to perish. This opinion is quite erroneous. I know a clump of more than a hundred bulbs, all of which have come from six bulbs planted some ten years ago in a raised bed, which has not since been disturbed. Many of the bulbs furnish eight flowers each, and the display is such as only this stateliest of flowers can make.

L. candidum, the old and well-known white Lily of our gardens, is the one we could least afford to lose. For graceful habit, stainless purity, and delightful fragrance it has no peer. It is fitted for any place, and for all occasions where cut flowers are desirable. It is about the only flower we do not like to cut, and that because it is too noble and pure to meddle with. This bulb should be removed in August, and not be suffered to remain long out of ground; it commences its autumn growth the last of August, and upon this growth its next year's bloom

depends. A blight has visited the Lily in many parts of this country, the cause of which no one has been able to discover, neither has there been found for it a remedy.

L. excelsum, or *testaceum* of many catalogues, is another noble Lily closely allied to the *L. candidum*, and resembling it in habit of growth. Its flowers are drooping, with reflexed petals of a delicate nankeen color, with the minor petals covered with darker warty spots. Its fragrance is delicate and pleasing.

L. speciosum, or, as it is more commonly known, *L. lancifolium*, is the most useful of all the Lilies. In point of beauty it ranks next to *L. candidum*, and is far more useful when cut. Of this species we should not be content with less than four varieties. Var. *præcox* is a strong grower, producing when well established twelve to fifteen very large, pure white flowers on a single stem, with regular and much reflexed petals often clasping the stem; in the centre of the flower the petals are studded with delicate little projections, like crystal points. Var. *purpuratum* has the same general habit, but is a taller and stronger plant, with dark rose-crimson flower whose petals, at the base, are seemingly rugged with rubies and garnets, while the edges are bordered with white. Var. *punctatum* differs in habit of growth but little from those already noticed, its flowers being pure white, delicately studded with light rose-colored spots. Var. *roseum*, or *rubrum*, is the most common and best-known of all the varieties. Much confusion exists in regard to its variety name. Some dealers call it *roseum*, others *rubrum*, many send it out under both names; the result is, if you buy one you have both, if you buy both you have but one, which one it matters but little. Its color is between that of *L. punctatum* and *L. purpuratum*. There are nearly fifty varieties of this species catalogued; the four described are fairly representative, and for a general display no more are required, while for a good collection neither could well be omitted.

L. longiflorum, the trumpet-shaped Lily, is conspicuous among Easter flowers, as it is well adapted for forcing. The popular Bermuda Lily belongs to this species. It thrives well in the open border, but it is folly to plant it unless thoroughly protected against frost.

L. tenuifolium is the earliest of all Lilies to bloom in the open border and one of the most remarkable, because of its brilliant scarlet flowers, borne in terminal clusters on very slender stems, which are beautifully clothed with grass-like foliage.

L. tigrinum flore pleno, although one of the much despised Tiger Lilies, is, when well grown, a noble and beautiful plant. I have had a single plant grow more than five feet high, with a diameter of more than three feet, bearing in a single season more than sixty flowers, and continuing in bloom fully six weeks. The flowers are orange-scarlet and very double.

Finally, let me say, that in making a selection one cannot well go wrong, for there is not a species or variety that is unworthy of a place in the garden. You will succeed if you deserve success, and you will be sure to increase the number of varieties annually. You will also observe that your investment has been relatively small, as plants that are steadily and rapidly increasing in number, though they may cost one dollar each when you begin, are, in the end, much cheaper than those that require to be removed every year, like all the popular bedding plants. C. L. Allen.

Kitchen-garden Notes.

ASPARAGUS.—For private use, plant in rows 3 to 4 ft. apart, 18 to 24 inches asunder in the row, and the top of the crowns 5 inches below the surface of the ground, which we do not raise into ridges at all. Marketmen plant 2 to 4 inches deeper, and in spring plow the earth from between upon the top of the rows in order to get white shoots. By sowing some seed in spring, we can keep up a supply of plants for new plantations or for filling up gaps in old ones.

BEANS.—In light, sandy land sow snap beans about the 17th or 20th of April, but it is not safe to sow them before the 24th. Valentine is the best of green-podded varieties; it does not rust or spot; Golden Wax is the best of the yellow-fleshed kinds.

BEETS.—Sow Egyptian or Eclipse in rows a foot apart.

CABBAGE.—As soon as young plants of early Wakefield are well hardened off, plant them out in rows 2 ft. apart.

CARROTS.—Sow a little Early Horn, Scarlet Stump-rooted and Danvers—the first a foot apart, the others 15 or 18 inches.

CAULIFLOWER.—Treat like Cabbage, only be more careful in having the plants well hardened off and the ground warm and rich; indeed, if the plants can be well taken care of, and the out-door conditions are not quite favorable, delay planting till about the 20th. Early Snowball is best.

CELERY.—Sow some Golden Heart and White Plume in a cold-frame. I do not sow the main crop till the last week in April, but this will be too late for less favored localities.

CUCUMBERS.—Sow Tailby's or Nichol's on sods or in pots in a hot-bed and plant out in May.

EGG PLANTS AND PEPPERS.—Keep them growing in pots in hot-beds, snug and warm and well covered up at night. They are very tender. There is nothing better than New York Improved Egg Plant or Ruby King Pepper.

LETTUCES.—Those sown last week in March in hot-beds are now fit for transplanting. Set them out among other crops, say between Cabbage and Cauliflower plants or between rows of Peas. Sow again, this time out-of-doors, for succession. Salamander and White Summer Cabbage are good for summer use. Every kind of Lettuce will fail in hot weather.

ONIONS.—For seed Onions select well-manured rich ground. After it has been well pulverized, tread or roll it to make it firm, then draw drills an inch deep and 15 to 18 inches apart; sow, cover and tread or roll. I prefer Yellow Danvers, Southport White Glove and Wethersfield Red. Or for early use plant sets, and the larger they are, the earlier they will be fit to use.

PARSNIPS.—Sow a little seed now and the main crop about three weeks later. Use deeply-worked rich soil, and have the rows 20 or 24 inches apart. Get the Student or Long Smooth.

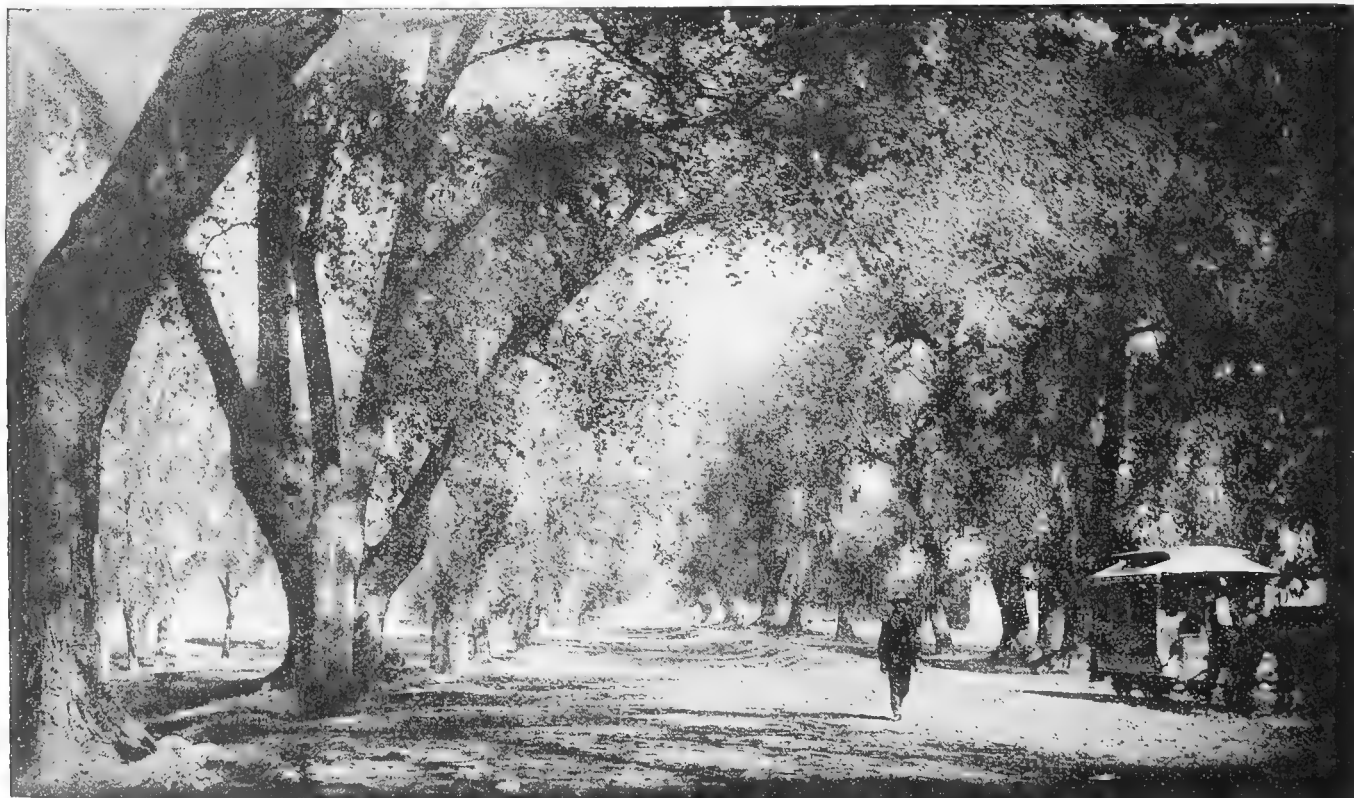
TURNIPS.—Make a small sowing once a fortnight. I much like the Strap-leaved sorts, also Purple-top White Globe. Early sowings are much troubled by worms in the "bulb."

HERBS.—Have some Mint, Thyme and Tarragon growing permanently; and from seed every spring raise some Chervil, Savory and Sweet Basil.

Fruit Garden Favorites.

AMONG the old Strawberries none please me so well as the Downing. There are more highly flavored varieties, and those more beautiful, but there is something in the quality of the Downing that leads me each season to the spot where it grows. Under good culture it is large and productive, but in some localities it is subject to leaf blight, so called, caused by a fungus growth.

Next to the Downing for the amateur I would place Mt. Vernon. It is attractive in flavor, productive and vigorous, but too soft for market. This, like many others, has been overlooked by many, in the crowd of new varieties that have been offered, yet it has friends everywhere, and will be planted more



The Alameda of Chihuahua. *Populus Fremontii*, Var.—(See page 105.)

PARSLEY.—Sow a row of Double Moss Curled at once in good ground. Old roots are persistently running to seed. Raise a fresh supply every year. For wintering in frames sow again about midsummer; this sowing will not "bolt" till next spring.

PEAS.—Sow nothing but wrinkled marrow Peas. Alpha sown now will give peas fit for use about the 10th of June; McLean's Advancer, about the 15th or 25th, and Stratagem about the 20th. Owing to season and conditions of cultivation these dates may vary. Sow all these varieties on the same day and with successions of Stratagem or Champion of England every ten days. Champion is the best Pea grown—but it is too tall.

RADISH.—Sow a small row once a week; they are fit for use four weeks after sowing. French Breakfast as a Turnip Radish, and Wood's and Chartier's as long Radishes, are good.

RHUBARB.—A barrel set over the stools will draw up the leaf stalks long and tender. Cut out flower stems as soon as noticed.

SPINACH.—Use Viroflay or Long Standing, make a small sowing once in ten days. Use Spinach as a catch crop between Cauliflower, Parsnip rows, or wherever else there is room.

TOMATOES.—Keep them growing vigorously in pots in frames. Give them plenty head and root room.

and more each season by those who appreciate a good Strawberry. Triomphe de Gand and Jersey Queen are both superior in quality to either Downing or Mt. Vernon, but usually will not yield half as much fruit, and in many localities are exceedingly fickle. Indeed, the Durand strain of Strawberries, to which Jersey Queen belongs, has proved uncertain with me as a rule, and also with many others. Parry and Jewell, of the same strain, while among the best of the family, are variable, the Jewell far more so than Parry, the latter proving to be a valuable early variety in many localities. It varies greatly in quality, however, in the same row the same day, a peculiarity which I have not noticed in any other variety. Among the newer varieties Jessie excels in quality united with productiveness, and Bubach in size, beauty and vigor.

It is a disputed question whether Strawberry beds should be cultivated during the spring, or bearing season, but weeds must be subdued, and shallow hoeing early in the season does no harm. Where the winter mulch is left between the rows it has a tendency to cause later ripening and increases the danger from frost, but otherwise the mulch is beneficial. If the soil is not fertile enough commercial fertilizers may be applied by hand, if care be taken not to permit them to touch the foliage. They should be mixed with the soil at

once with the hoe. The Strawberry is a good feeder, and wood ashes, nitrate of soda, common phosphates or almost any fertilizer will be acceptable. The proper time to apply, however, is before planting, and I would select yard manure if I could have my choice. The earliest berries will be found on the sunny side of dry knolls, or adjoining tight board fences, or timber belts that afford protection. A cold-frame with glass over a portion of the bed will cause those thus covered to ripen before their less favored sisters.

It is not easy to explain why Raspberry and Blackberry plantations deteriorate when the dead canes are not removed, but such is the fact. Possibly the dead wood absorbs too much moisture from the roots. I often renew an old plantation by mowing off both dead and living canes close to the earth while the soil is frozen, hoeing and fertilizing afterward. As the plants attain age they throw up too many canes, thus causing the small berries found on old plantations. We often thin out the bearing canes on old plantations one-half. These fruits, and in fact most fruits, abhor an undrained soil. Wet land is the principal source of failure with the Raspberry and Blackberry. It is the cause of winter killing and feeble growth. Last season many Raspberries turned brown and withered before ripening, lessening the crop one-third. The severe freezing of the previous winter enfeebled the plants. On high, dry lands less loss of this character was observed.

Patrick Barry used to say that the quality of a Black Raspberry was hardly worth considering, but I think he would not say so now, for the varieties differ greatly in quality. Mammoth Cluster is among the best, and Gregg is most deficient in quality. Red Raspberries differ in quality as much as apples. There are few who enjoy the better varieties, as they are not hardy, but they can be easily protected. Franconia possesses many of the good qualities of the better class of red, and Brinckles' Orange of the yellow. In Blackberries the old Lawton and Kittatinny have not been excelled in size and quality, but it must be remembered that they are seldom permitted to ripen fully. If eaten as soon as they color they suggest sips of vinegar or lemon juice, but a week later they soften and are sweet as wild honey.

Rochester, N. Y.

Charles A. Green.

Peat Muck for Trees or Lawns.—The cleanings of ponds, or peat-muck dug out of the swamps, if carted into a heap on dry ground and left there for one or two winters to freeze and pulverize, is then in capital condition to mix with soil for trees and shrubs. Indeed, it is the best thing we can add to the soil for this purpose. It has an excellent effect on nearly every kind of loamy, gravelly or sandy soils. Its free use on clayey lands renders them more open and congenial to tree and other plant roots, and less liable to bake and crack in summer. On gravelly and sandy land it has an ameliorating and fertilizing influence; besides, it enables the land to hold manure better than it did before the muck had been used. Jarvis Field—the base-ball grounds at Harvard College—was leveled, graded and laid down fresh to grass some years ago. The land is very sandy; indeed, so sandy, that, unassisted by clay, loam or muck, a good stand of grass could not be produced and retained on it. As any quantity of muck could be had conveniently, it was freely used, and a good sward secured. The idea is sometimes entertained that about as much muck as manure will be sufficient. But in preparing holes for trees, one-fourth the bulk of the soil of muck will be little enough. On sandy land for grass, a layer three to six inches deep all over, and this well plowed and harrowed into the ground, but still kept near the surface, will be none too much. But muck alone will not retain a vigorous sod; surface-dressings of manure should also be used. Lawns, in making which muck has been freely used, should be well rolled early every spring, else the frost will leave their surface puckered and uneven.

W. F.

Transplanting the Arbutus.—The trailing Arbutus is so rarely seen in cultivation that there is some color for the prevalent opinion that it is difficult to transplant. If there is a serious disturbance of the root the plant nearly always dies, but I have transplanted it many times with perfect success. The work has always been done in early spring, just after the flowering is over. A trowel or spade is run down well around the plant, so that a good ball of earth comes with it. Sturdy, small, bushy plants are the best. Of course a shady place should be selected for it. I once set a plant among some rocks in a hollow, shaded by trees; another time at the foot of a small hillock facing north, in both of which situations it flourished and flowered. About Philadelphia the east bank of the Wissahickon is a favorite spot for this plant, but the city is spread-

ing over the Wissahickon hills and is closing in upon its hiding place. This means that the Trailing Arbutus, and many another wild beauty, will soon be lost to us. *Joseph Meehan.*

Petalostemon decumbens is one of the good hardy herbaceous plants that bloom in May. Its flowers are borne in dense spikes of rose throughout the summer. It is one of the legumes, and very distinct, rare and beautiful. It is most suitable for the alpine garden. An established plant will cover nearly a square yard; and as it dies back every fall to an unbranched woody rootstock, from which all decumbent flowering stems arise, it remains much of the same size and condition for years, and can never become a nuisance like some other pretty plants, by becoming too obtrusive. It reaches a height of six or eight inches.

T. D. Hatfield.

The Forest.

The Forest Vegetation of Northern Mexico.—II.

Populus Fremontii, var. *Wislizeni*, *Watson Cottonwood*.*—Though the impression was purposely conveyed in the preceding article that the high plains of North Mexico are destitute of arborescent vegetation, a few unimportant exceptions must be mentioned. Conspicuous among these is this Cottonwood, which rears high its rounded head of abundant bright green foliage, in striking contrast throughout most of the year with the gray and brown tints of the surrounding landscape. This tree is not abundant, because water is not abundant; for it is a sure index of the presence of living water either on the surface of the soil or not far below it. It grows scattering along streams or clustered about springs. Its centre of distribution is on the Rio Grande, and it follows this river northward to its upper waters in south Colorado and the tributaries of this river from whatever direction into their narrower mountain cañons. Westward it ranges along the boundary quite to the Pacific, and southward extensively through the valleys of Mexico, and there often carried by man considerably beyond its indigenous limits.

Cheering to the traveler over heated and dusty hills and plains is the sight of its shining leafage with promise of refreshing shade and water. The Mexicans seem to regard this tree with sentiments similar to those cherished by the Orientals for the Palm or the New Englander for the Maple. They plant it by the water, convenient to which they have built their dwellings, and set it along their irrigating ditches. No visitor to Mexico but has noticed and admired that peculiar feature of Mexican cities, the avenue of grand old Poplars, double-lined on each side it may be, kept alive and flourishing, if on high ground, by streams of water conducted along the rows. The Spanish name for the Cottonwood—for any species of Poplar, in fact—is *Alamo*, that for this avenue *Alameda*, a noun having the form of the perfect participle—that is to say, the Poplared place.

Perhaps it is owing to this sentiment as much as to his proverbial inertia, that the Mexican so generally withholds his axe from his *Alamos*. I have never seen the tree systematically pollarded for firewood in Mexico, as is the practice of Americans in southern California. Seldom is it robbed of its branches, unless they are wanted for planting. In this matter, as in so many others, the Mexican shows his lack of enterprise. His scanty supply of fuel is mostly gleaned amongst Scrub Oaks of mountain sides or the paltry shrubbery of mesas, and brought by pack trains of donkeys through ten or twenty weary miles, when much of it might be grown on stumps along the waste borders of the valley stream or in its torrent-swept gravel.

Nevertheless, when necessity compels, the *Alamo*, yielding in many places almost the only procurable timber of much size, serves, as I have seen, for the few purposes besides fuel required by these simple people—for beams of inferior quality to support the earth covering of the poorer dwellings, mere mud hovels, for crotched posts of bough-covered porches and sheds attached to these, for the huge bars and bar posts and the stockade of corrals for cattle,

* See illustration, page 104.

and even in the construction of the wheels, frame and pole (each six or eight inches thick) of the cumbersome carts of the country.

Associated with the Cottonwood, one sometimes meets with a few scattered specimens of *Salix nigra*, the Black Willow, in size and aspect, as well as in species, identical with the common Willow of the United States. Its tough, strong and easily worked wood is used by the Mexicans for making saddle-trees.

Salix irrorata, a Willow which, among the mountains of Colorado, grows but six or eight feet high, sometimes in Chihuahua follows the streams from mountain cañons down to the plains, and makes in alluvial soil a small tree.

Salix taxifolia, here, as in Southern Arizona, at home along the gravelly alluviums of streams, makes a small tree with a single straight trunk.

Fraxinus pistaciifolia, the Mexican Ash, often comes out of the mountains in the same way, and in fertile, well-watered valleys makes a large and beautiful tree, two to three feet in diameter and fifty or sixty feet in height. Therefore it is often planted along with the Cottonwood in towns and about the *haciendas* of the rich. The quality of its timber, however, is far inferior to that of the northern White Ash.

Sambucus Mexicana, the Mexican Elder, sparsely scattered through bottom-lands, attains a diameter of nearly a foot and a height of fifteen to twenty. With its rotund head of dense, deep-green foliage, its white flowers and its edible fruit, it often gains a place about Mexican houses.

Juglans rupestris, the Black Walnut of the Southwest, frequently leaves mountain cañons, even following down *arroyos* dry throughout most of the year. Its average diameter in such situations is twelve to eighteen inches and height twenty to thirty feet. With its low, wide-spreading branches, covered with smooth, light-gray bark, it resembles, when not in leaf, the fig-tree. Its nuts, less than an inch in diameter, when freed from their rind, are too meagre to be much prized even in a country where there are no nut-bearing trees except Oaks and Pines.

Celtis occidentalis, var. *reticulata*, the Hackberry in similar situations, a small tree about a foot in diameter at best, is the only remaining arborescent species of the high northern plains worthy of mention.

C. G. Pringle

Notes on the Norway Pine.

THIS pine is at home in Minnesota. The young trees have the sturdy appearance of the Scotch and Austrian pines, and would they not with equal care prove more beautiful? Cold does not warp the leaves, while the White Pine and the White Cedar have a pinched and frozen appearance with a temperature of 40° F.

The groves of mature trees of Norway Pine form a green roof supported by bronze pillars; light, open, and breezy; in marked contrast with the dark and brushy White Pine woods. The Norway cannot rival the queenliness of the mature White Pine, however. Norway pine is the hardest and most productive timber produced on the sandy and gravelly ridges and knolls of northern Minnesota. Three measurements of Red Pines are as follows:

Age.	Diameter in inches three feet from the ground.	Feet of lum- ber, board measure.
* No. 1	36 years	12
101 " "	19	360
† No. 2	36 " "	13½
101 " "	23	640
‡ No. 3	19 " "	9
140 " "	20	580

* Injured by fire during fifteenth year.

† Near foot of hill, fifty feet from other Norway trees.

‡ Average tree.

"Jack Pine" (*Pinus Banksiana*) is the natural nurse of Norway pine timber in this region.

H. B. Ayres.

Correspondence.

To the Editor of GARDEN AND FOREST:

I am glad to see that an experienced and learned planter like Mr. Dana condemns in such unmistakable language the Norway Spruce. No tree (for no other foreign tree has ever been so generally planted) has ever so injured the appearance of our plantations. But it is surprising that Mr. Dana, with all his observation and experience, should find any praise for the Austrian Pine. This is certainly one of the poorest trees ever introduced into this country. It is only necessary to see the specimens which were planted in the Central Park, in this city, twenty-five or thirty years ago, to be convinced of this. They vie with the Norway Spruces and Scotch Pines in their shabby and disreputable appearance. These three are the most unsatisfactory trees which have ever been planted in America. The fact that they are very hardy, and grow very fast during a few years, only makes their subsequent want of vigor the more disappointing. The Austrian Pine pushes out vigorously when it is young, but even in its best days it appears lumpy and heavy. As it gets older it grows thinner and thinner, borers attack the trunk, and branches die and fall off. Even in the mountains of southern Austria, where the species flourishes, it is never a large or picturesque tree, and no wise man will ever plant it with the expectation of its lasting more than a few years. Our native Red or Norway Pine is the best substitute for either the Scotch or the Austrian Pine; just as our native White Spruce is the best substitute for the Norway Spruce. The Red Pine is a graceful tree of agreeable color and rapid growth; it is very hardy and will flourish on poor soil.

Why does not Mr. Dana mention the Douglas Fir, which now promises to become one of the most valuable of all our ornamental Conifers? It has proved itself to be an exceedingly valuable and attractive tree in England, where there are specimens more than one hundred feet high. It has been cultivated in this part of the United States for a quarter of a century, or since its discovery in Colorado, and there is not one of the new Conifers which now promises so much.

Among the foreign trees which Mr. Dana extols is *Abies brachyphylla*. The color of this plant is a beautiful dark green, and it grows upward with great vigor, but its strength is in the top. The lower branches are weak (and this is true of the nearly related *A. Veitchii*) and become overshadowed by those above. The result will be that plants of this species by the time they are twenty or twenty-five years old will be bare at the bottom as a specimen of *Abies firma*, the most unsightly of Conifers in this climate. But there are other Japanese Conifers of the greatest merit and much promise which I should like to add to Mr. Dana's list. At the head of these I place *Picea Ajanensis*, which in most collections is cultivated under the erroneously applied name of *P. Alcockiana*, another and much less desirable species of northern Japan, closely related to, if not identical with, the Siberian *P. obovata*. *Picea Ajanensis* is perhaps the handsomest Spruce which can be grown in this climate, for, unfortunately, we cannot have in perfection the lovely and graceful Himalayan Spruce, *P. Smithiana*. Another Japanese Conifer of great beauty and promise is *Thuja Japonica*, improperly called in most gardens *Thuyopsis Standishii*. *Pinus parviflora* is a small and graceful White Pine which should find a place in every collection. It is perfectly hardy; and so too is the Corean Pine, *P. Koraiensis*, one of the most desirable and attractive of the five-leaved Pines. It is never a large tree, but is a very beautiful one, and is better in color even than our native White Pine, and much denser in appearance, as it retains the leaves on the branches during three or four seasons instead of for a single year. The other Japanese Pines, *P. Thunbergii* and *P. densiflora*, are very hardy, but they have no ornamental value. There are several other Conifers which should promise well in this climate, such as *Pinus Murrayana* and *P. monticola*, from the mountains of western America; *Pinus Peuce* and *Picea Omorika* from south-eastern Europe; *Abies Davidiana*, from northern China, which will probably turn out to be a second species of *Keetleria*, and several others. I hope Mr. Dana will give your readers his experience with these and other plants in his large and interesting collection.

New York City, April 8th.

Strobilus.

[We are glad of an opportunity to publish the experiences of planters with new trees. They should all be planted here and carefully tested. The introduction of one first rate tree will repay a thousand failures. It must be borne in mind, however, that we really know very little yet about Japanese and many other exotic Conifers, and still

very little about those from Colorado—much less than we did about the Norway Spruce, when it was thought to be the best Conifer that could be planted in America. The time may come when we shall learn that they are all unreliable. It takes a long time to test the adaptability of a tree to a peculiar climate, and such experiments should be carried on in public establishments, where time and the chances of failure are not important elements, or by individuals who are willing to devote their time and money to such experiments for the sake of the experiments themselves. It is to such planters that we owe in this country most of our knowledge of foreign trees. Those persons who cannot afford to make experiments or run risks with their plantations should plant only such trees as have been thoroughly tested and are known to flourish in this country.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—In the inhospitable climate of New England, the first sight of the fragile flowers of the Hepatica with its delicate hues, opening in some sheltered spot, before the Winter has fairly gone, always brings a thrill of delight.

Bigelow, in his "Florula Bostoniensis," thus gracefully speaks of the Hepatica: "This delicate little plant is one of the earliest visitors in spring, flowering in sunny spots before the snow has left the ground. The flowers appear on hairy scapes before the leaves. Petals oblong obtuse, purple, sometimes white." It is, however, more especially as an indication of the comparative earliness of different springs that I wished to speak of this flower, having recorded its first appearance in the same locality and mostly on the same plants, for the past twenty-six springs.

The following are the dates in the several years :

April 26th, 1863.	March 30th, 1876.
" 24th, 1864.	" 11th, 1877.
" 2d, 1865.	" 10th, 1878.
" 15th, 1866.	April 5th, 1879.
" 7th, 1867.	March 2d, 1880.
" 19th, 1868.	April 3d, 1881.
" 11th, 1869.	March 5th, 1882.
" 10th, 1870.	April 1st, 1883.
March 19th, 1871.	" 13th, 1884.
April 12th, 1872.	" 15th, 1885.
" 8th, 1873.	March 18th, 1886.
May 3d, 1874.	" 21st, 1887.
April 11th, 1875.	" 23d, 1888.

Chestnut Hill, Mass.

D. D. Slade.

To the Editor of GARDEN AND FOREST :

Sir.—Will some reader of GARDEN AND FOREST tell me if a Savin would grow under the shade of a Horse-Chestnut whose lowest branches are ten feet from the ground. The grass is poisoned by the drip. Blue Laurel or Periwinkle does well under similar circumstances. If Savin is unsuitable what can be planted? Could Honeysuckle or Jackman Clematis?

Providence, March 29th.

Ivy —.

[Undoubtedly the best plant to grow under the dense shade of a Horse-Chestnut tree is the Periwinkle, which thrives in such situations and makes an attractive appearance throughout the year. If this plant is used the space under the tree to be covered should be carefully forked over and enriched with well rotted stable-manure, and if a dressing of fresh soil can be added it will greatly improve the bed. Strong, well rooted plants only should be set twelve to eighteen inches apart. They should be freely watered during the first season, as the roots of the Horse-Chestnut will absorb a great deal of moisture and so make the surface soil dry. Dwarf Junipers or "Savins" would suffer from drought and shade and give little satisfaction in such a situation, and so would Honeysuckle or Clematis. The Rose of Sharon, or Aaron's Beard (*Hypericum calycinum*), a dwarf and very beautiful, almost evergreen shrub from south-eastern Europe, is very generally used in England to clothe the ground under the shade of trees. It is admirably suited for this purpose, but in New England, except, perhaps, in the extreme southern part, it would require a slight protection in winter. We shall be glad to

hear of the experience of our readers with this plant, which is not sufficiently known or appreciated in this country.—Ed.]

To the Editor GARDEN AND FOREST :

Sir.—It is well known that the old *Azalea Indica alba* is perfectly hardy as far north as New York City, and also that *Azalea amena* and its relatives are hardy. But who knows that other varieties of the showy Indian Azaleas are not hardy? These plants have always been high priced, and growers have not experimented with them much in the open air. There is here an opportunity for some of the new experiment stations to do a good turn for landscape gardeners by making tests of the hardiness of all these showy plants. I am inclined to think that there are many hard-wood green-house shrubs that can be grown in the open air further north than we now imagine. Trees of *Citrus trifoliata*, which I planted in northern Maryland eight years ago, bore fruit last year, as stated by a correspondent of the *American Farmer*. These trees the first year they were planted went through a cold wave, in which the mercury fell to 18° below zero, without the loss of a twig. The fruit of this *Citrus* is about the size of a green Walnut with the hull on, with thick skin and is bitter to the taste. It is good, however, for marmalade. The trees, with their golden fruit, are highly ornamental, and when leafless they are still attractive from the bright green color of the bark. This Orange is a valuable plant for hedges on account of its dwarf and dense growth and terrible thorns. When the seed becomes more plentiful it will no doubt take the place of all other hedge plants where it is hardy. Here also is work for experiment stations in raising hybrids of a more or less hardy nature by crossing this hardy Japanese species with the varieties that bear luscious fruit in Florida. It is not impossible that in this way the Orange belt might be moved much north of its present limit.

Miller School, Va.

W. F. Massey.

[Experiments in testing the hardiness of trees and shrubs are made continuously in this country in both public and private establishments, and one of the duties of GARDEN AND FOREST is to record and make known the results of such experiments as soon as they appear conclusive. The trouble with the Indian Azalea as an out-door plant, even very much further south than this latitude, is, that while it may be sufficiently hardy to withstand the cold of ordinary winters, it has not the reserve strength of constitution to enable it to survive the exceptionally cold waves which pass over this country every few years. South of Virginia the Indian Azalea is one of the most beautiful shrubs which can be grown, as March and April visitors to Mr. Drayton's charming gardens near Charleston can testify; and it is surprising that this plant is not more often seen in our Southern cities. North of Virginia the Indian Azalea should only be planted as an experiment, and with the expectation that unusually cold weather will kill it outright, or at least cut it down to the ground. *Citrus trifoliata* is hardy here; at least a plant has grown and flowered freely in a sheltered spot in the Central Park for many years. This little Orange, however, must be grown more extensively before its perfect hardiness at the North is demonstrated.—Ed.]

Flower and Fruit Pictures at the Academy of Design.

THE flower and fruit paintings which may now be seen at the Academy of Design cannot, as a whole, be included among the pictures which give the exhibition its character as the best that has yet been held. They are not very numerous, and a diligent search reveals scarcely half-a-dozen which can be called even tolerably good. The best American painters of flowers are not represented—neither Mr. LaFarge nor Mr. Alden Weir, both of whom paint flowers beautifully in the most poetic way, and neither Miss Greatorex nor Mr. Carlsen, both of whom are singularly successful in treating them from the decorative point of view. Several ambitious attempts at a decorative treatment of showy flowers may be found. But Mrs. Dillon is not up to her usual level in either her "Roses" or her "Chrysanthemums"—both being painted in a soft, cottony fashion. Mr. C. C. Coleman, too, is hardly up to his average in his picture of purple Magnolias in a purple

jar (ugly enough to have been Rosamond's in Miss Edgeworth's famous story), relieved against a purple velvet hanging—his flowers are painted with little tenderness or charm, and his color scheme is sombre and unattractive. And as for Mr. John F. Weir's large picture of Peonies, it quite deserves that an action for libel be brought against it.

Little variety is shown in the choice of subjects. Roses and Chrysanthemums preponderate—the best being Mr. Ramsey's pink and yellow Roses on a pink cloth, and Mr. Binford McCloskey's yellow and white Chrysanthemums against a dark red background. But neither of these pictures is remarkable, and not much can be said in praise of any of the Hollyhocks, Pansies or Geraniums, which include almost all the other flower paintings. The best of them are very prosaic in effect, and if prose in painting is ever to be condemned as such, it must surely be in the case of pictures of flowers—unless, of course, they are intended to have a merely documentary, scientific value, in which case the higher canons of art cannot be applied to them. The very essence of a flower that is worth painting at all is that it has poetic quality of some kind—either of the bold, brilliant and emphatic kind which touches sentiment on its more sensuous side, or of the idyllic, subtle kind which touches it in its tenderest and most delicate fibres. There is music in the blare of trumpets as well as in the tones of a violin; and so there is pictorial poetry in Chrysanthemums and Peonies as well as in the Wild Rose and the Narcissus. And whoever paints either the one or the other without translating and accentuating this sentiment, fails in the essentials of his task, however correctly he may seem to have drawn and colored, however gracefully he may have grouped his flowers. From this point of view there seemed to me only one really good piece of flower painting in this exhibition—Miss Conkey's simple little picture of pink Chinese Primroses in a broken basket has much more true sentiment in it, more truth to the charm of its subject, more tenderness and poetry than any of the others.

The fruit pictures, among which I beg leave to include two or three excellent pictures of Onions, are much better as a rule than the flowers. Mr. W. J. McCloskey has done excellent technical work in his little painting of Tangerine Oranges wrapped in white papers; Mr. Conely's "Pan of Apples" is very good; and Mr. Harry Eaton's "Fruit"—Oranges and black Grapes on a white cloth—is admirable. There is very clever handling in it, and there is also the great desideratum—a touch of true pictorial sentiment.

If it seems to be difficult to paint flowers well, and especially Roses, what must it be to carve them in marble? Yet even this task is not beyond the power of a good artist. The Roses which the lady holds in her hand whom Mr. St. Gaudens has portrayed in a marble low-relief, are absolutely perfect in their truth to the grace, the delicacy and the poetry of the flower.

M. G. van Rensselaer.

Recent Plant Portraits.

ODONTOGLOSSUM CRISPUM GOUVILLEANUM, *Revue Horticole*, March 16th.

PRUNUS CAPULI, *Revue Horticole*, March 16th. The plant here figured appears to be *Prunus serotina*, which is sometimes seen in French nurseries under the name of *P. Capuli*, a Mexican and South American tree for which the oldest published name is *P. salicifolia*.

CRASSULA LACIEA, *Gardener's Chronicle*, March 10th.

BEGONIA LUBBERSII, *Gardener's Chronicle*, March 10th.

PHALÆNOPSIS, John Seden, *Gardener's Chronicle*, March 17th. A hybrid raised in the establishment of the Messrs. Veitch from *P. amabilis* of Blume, crossed with the pollen of *P. Laddemanniiana*. The flower is described as "three inches in diameter, ivory white, densely and uniformly spotted all over both sepals and petals with small dots of a beautiful light purple, the lip suffused with light rosy purple."

CARYOTA SOBOLIFERA, *Gardener's Chronicle*, March 17th.

HYACINTHUS CORYMBOSUS, *Bulletino della R. Societa Toscana di Orticultura*, February. A dwarf purple-flowered Cape species.

PEAR; PIERRE TOURASSE, *Bulletino della R. Societa Toscana di Orticultura*, February.

TEA ROSE; MADEMOISELLE FRANCISCA KRÜGER, *Journal des Roses*, March.

GLADIOLUS OBERPRÖSIDENT VON SEYDERRETZ; *Gartenflora*, March. A semi-double and not very attractive variety.

BEGONIA LUBBERSII, *Revue de l'Horticulture Belge*, March. A showy Brazilian species with pale flowers and beautifully marked foliage.

ODONTOGLOSSUM INSLEAYI, var. LEOPARDINUM, *Revue de l'Horticulture Belge*, March.

VANILLA FLOWER AND ITS FERTILIZATION, *Bulletin, Royal Gardens, Kew*; March.

URENA TENAX, *Bulletin, Royal Gardens, Kew*; March. A valuable fibre plant from Natal.

Retail Flower Markets.

NEW YORK, April 20th.

Trade is generally good throughout the city. It is brisk in Broadway shops that catch the cream of it, as a rule. The supply of cut flowers is very full, yet really choice flowers are scarce. Only perfectly grown Roses, that have not been injured after having been cut, will satisfy the patrons of florists in first-class localities; but selected hybrids bring 75 cts. The average run of them are sold for 50 cts. Puritan Roses cost 40 cts. Very large La France—and there are some grand specimens brought in from Hudson River localities—are offered for 50 cts. each. There are quantities of indifferently grown ones arriving, which bring \$3 a dozen. Catherine Mermets have improved in quality; they sell for \$2 and \$3 a dozen. Bride Roses are 20 cts. each, and Perles des Jardins, Souvenir d'un Ami, Papa Gontier and Niphetos cost \$1 a dozen. There are a limited number of Papa Gontiers arriving, which are very large and handsomely colored, that bring \$2 a dozen. Mde. Cusins costs \$1.25 a dozen and William Francis Bennetts are \$1.50. There is a glut of *Lilium longiflorum*, the best of which are sold for \$3 a dozen. These flowers were disposed of for \$5 a hundred early in the week, at wholesale. Callas cost 25 cts. each. The average Lilies-of-the-Valley of indifferent quality bring 75 cts. a dozen, and the best bring \$1. Tulips, Daffodils, Roman Hyacinths and Poet's Narcissus cost 75 cts. a dozen. Cut spikes of Dutch Hyacinths sell for \$1.50 a dozen. Daisies are 25 cts. a dozen, and Meteor Marigold is 50 cts. a dozen. Mignonette is very handsome, and brings from 50 cts. to \$1 a dozen. Both white and purple Lilacs are of excellent quality, and are in good demand at \$2 a bunch. Violets are opening their eyes, and becoming poor. They bring from 75 cts. to \$1.50 a dozen. Orchids are so scarce that the shops show none. Gardenias bring \$3 a dozen. Smilax is 40 cts. a string, and *Asparagus tenuissimus* is 50 cts. a yard.

PHILADELPHIA, April 20th.

There has been no serious break in the flower market, no glut, since the heavy Easter traffic, owing to the numerous dinners, receptions, weddings and other festal gatherings in society. Good flowers are plentiful, excepting Lilies-of-the-Valley. The price of these, however, remains at \$1 per dozen. Tulips are steady at the same quotation. Owing to the great numbers of the single Trumpet Daffodil which are now blooming freely in the open air, the price has dropped to 50 cts. per dozen; Van Sion, the double variety, which can only be obtained in quantity from green-houses, holds to the price of \$1 per dozen. Plants in full flower of varieties of *Primula vulgaris* are becoming more plentiful. The strain in cultivation here is now so mixed by cross fertilization, that it is difficult to distinguish the Polyanthus of our youth from the English Primrose, or, rather, we have Polyanthuses with flowers of the English Primrose. They are very showy and beautiful. One of the most effective uses to which they can be put is, when growing in two-and-one-half or three-inch pots, to arrange them as growing plants in plateaus for dinner-table or other decorations. Forget-me-not is used in the same way. Jacqueminot Roses sell at \$3 per dozen. American Beauty, Mrs. John Laing, Baroness Rothschild, and its white variety, Merveille de Lyons, sell at from \$4 to \$5 per dozen. French Marguerites sell at 25 cts. per dozen; Carnations 35 cts.; Astible 50 cts. per dozen sprays. Smilax remains scarce. *Asparagus tenuissimus* is plentiful and very fine. At a recent dinner an effective centre piece was a flat, circular basket, five feet in diameter, filled with Callas, from which yellow Tulips arose.

BOSTON, April 20th.

The cut flower market continues in an unsettled condition, the result principally of over production. The past winter has been unfavorable to heavy cropping, this being especially true regarding Roses, and now the plants seem to be bent on making up for lost time. So flowers are too plenty and prices unusually low. But this condition is not caused by a reduced demand, for it is very evident from the number of buyers, and the enormous quantities of flowers handled, that flowers are not in the least losing their hold on our people. Corsage bouquets of Roses and spring flowers are very generally worn on the street, and have become almost an essential part of a lady's theatre costume. Such varieties as the Poet's Narcissus, Mignonette, Forget-me-not and Violets are extremely popular for this purpose. There seems to be a very general dislike of strong-scented flowers. Dutch Hyacinths, which are now abundant, are almost unsalable, for no other reason, apparently, than their heavy odor. Though offered in almost every color of the rainbow, and dazzlingly brilliant in mixed collections, these good qualities seem to count for nothing. Violets are getting quite small, as they always do on the approach of warm weather, but they are not abundant, and sell readily for 75 cts. per bunch. Roses remain as at last report, with a downward tendency in prices. Carnations, like Violets, are seen reduced in size, and they are abundant and cheap. Lilies of all kinds are offered in large quantities at low figures. They make more show in large decorations than anything else that can be obtained at present for the same price. Bulbous flowers of all kinds are plenty. In general, the prices and quantities of flowers offered are such that, for the present, at least, no one need be without them.

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American Cemeteries.

THERE is nothing in this country to which foreign writers give more praise than to our cemeteries. The student of social customs sees in them one of the chief proofs we give of genuine sentiment on the one hand and wise sanitary foresight on the other; and the student of art and nature sees in them our most characteristic and best achievements in the art of landscape gardening. Their size, their park-like arrangement, their remoteness from the local centres of population, and the care and neatness with which they are kept, are held up to foreign communities as points in which they would do well to imitate us. Certainly, as contrasted with the formal, walled-in, crowded, dreary, sun-baked or weed-grown cemeteries seen in most foreign lands, ours deserve much praise. But they are not what they ought to be. Excellent in intention, they are too often bad in execution. No expenditure of money, pains or skill is wanting, but in directing this expenditure we too often make grievous errors.

The cause of these errors, as one of our contributors has recently pointed out, is that we do not abide by the general idea with which the place was set aside for this special service. The characteristic feature of American cemeteries is that they are rural, no matter how large may be the communities for which they serve. But this characteristic we do our best to conceal or destroy. Nature is asked to take our dead in charge, and then we do a thousand things to ruin the repose, the sanctity and beauty which she is ready to provide. Too many and too prominent roads and walks are made, giving the cemetery the aspect of a place for pleasure promenades rather than for the retirement of those whose dead it holds. We take pains to make ample allowance of space to each purchaser of ground, partly that for his sake the graves shall not be too closely crowded and partly that they shall not destroy the unity and repose of the landscape. And then we often nul-

lify our efforts by enclosing the lots with heavy railings and by building huge and showy monuments. We think we want a natural landscape, and then we plant the cemetery—not the private lots alone, but the parts which have been preserved intact for the sake of landscape beauty—with tropical plants, formal beds of gaudy flowers, and ribbon-patterns, borders, and endless puerile devices, wrought with bright-foliaged plants, which only support our climate a few weeks or months and then disappear, leaving dreary nakedness behind. In short, we lose sight of the main purpose for which the cemetery was designed, fail to keep any general idea or scheme in mind, and instead of a rural burial-ground produce something which is a meaningless, unnatural and essentially vulgar compound of a cemetery, a park, a horticultural exhibition and a collection of works of architecture and sculpture. And this we do by means of a vast waste of pains and money. No one who has not inquired into such matters can imagine what it costs to plant out year by year the exotics which are supposed to adorn our cemeteries, and to winter them from one year to another. Few realize the degree to which cemetery companies now compete with one another in this direction, bidding for public patronage by means of costly horticultural establishments and verbose advertisements of their horticultural resources and achievements. All this is wrong—wrong from the point of view of good sense, from the point of view of true sentiment, and from the point of view of art. The true ideal for the making of an American cemetery, whether large or small, is this: That spot should be selected of which the natural charms are greatest in direction of peacefulness and the harmony which means variety in unity. Its features should be as carefully preserved as possible in laying out the walks and drives, which should not be more numerous than actually required for purposes of burial and of visiting the graves. Such planting as is needful should be done in a way to complete the existing beauty, and accentuate, not disturb, the natural character of the spot. Costly exotics should not be introduced, no showy flower-beds allowed, no formal arrangements of planting of any kind permitted. They are out of keeping alike with the kind of beauty that is desired and with the spirit in which a cemetery is properly visited. Owners of lots should not be allowed to surround them with railings. They are palpably useless; they are glaringly injurious to unity and repose of effect; they serve merely to display proprietorship, and nothing can be in worse taste than such a display in such a place. Owners should be encouraged, too, to make their monuments not only as artistic, but as simple and unobtrusive as possible. Only a great man, one to whose grave future generations are likely to make pilgrimages, is entitled to have his resting place conspicuously marked; and even he does not need that it should be thus marked. Something which will indicate where a body lies and whose body it is, while disturbing as little as possible the unity and peacefulness of the scene—this is what a grave-stone should be. It is needless to say that color as well as form should be considered with this fact in mind. Granite is the best possible, our favorite white marble the worst possible, material for cemetery monuments; and a flat slab is preferable to a vertical shaft or stone. If large boulders chance to be strewn over the ground nothing is more appropriate for monuments, a simple inscription being cut upon a space made smooth for the purpose, while the rest of the moss-grown or vine-covered surface remains in its natural condition. Owners should be restrained in their desire to plant showy flowers about the graves—should be taught that it is not justifiable for them to indulge their personal wishes in this way if they conflict with the greatest good of the greatest number as provided for in the peaceful unity of aspect that the cemetery as a whole should have. And finally, while the cemetery should be carefully kept and tended, there must be no evident straining after excessive finish as the most desirable of all qualities in all portions of the grounds.

Plans for Small Places.

MORE than once the request has come to us to publish a plan for a small suburban building lot, and to this the natural reply has been: "What lot?" Such plans cannot be furnished like ready-made clothing, in assorted sizes and warranted to fit any piece of land. Even from a cultural point of view no list of plants for a given place can be recommended unless its soil, aspect, drainage and other physical conditions are known and considered. And of course the territory lying about and beyond the lot, together with the relation of these surroundings to the lot itself, suggests problems of prime importance. What disagreeable or incongruous objects are to be planted out of sight? What outlook is to be preserved and made more pleasing by a proper treatment of the foreground? What are the tastes and necessities of the family which is to occupy and use the house and grounds? These and a hundred other questions must be met with specific answers in every given instance.

It does not follow from this that all general plans, of which so many have been published, are useless. The best of them have been made with a view to solve some special difficulties. They contain helpful suggestions and illustrate principles which are of wide application. But after all, no plan, however perfectly it may be adapted to one location, can be repeated with the same success in another. The attempt to reproduce effects in landscape work that have been agreeable elsewhere is invariably disappointing. To follow a fashion in gardening is rather more displeasing than to copy second-hand ideas in any other art. And even if it were not desirable in every case to produce something original, characteristic and appropriate, all efforts at imitation must prove but parodies, because growing plants develop into infinite variety. No two trees or shrubs—still less two groups of trees or shrubs—can be exact duplicates. The same selection and arrangement of plants at opposite ends of a village street will make pictures totally unlike in spite of the most painstaking effort to nurse them into a uniform effect.

When, therefore, we requested Mr. Olmsted to prepare a plan for an unpretentious homestead, we expected him to choose a lot with a character of its own and explain how he would adjust it to the wants and tastes of a particular household. The value of this study is not alone that it shows how difficulty can be converted into opportunity, and a strong-featured piece of ground on an abrupt hillside with cramped and irregular boundaries can be turned into a desirable building lot. In a broader way it is useful as illustrating the class of problems that present themselves whenever thorough work of this kind is contemplated, and as illustrating, too, how these problems are solved by a trained and conscientious artist.

Cut Flowers and Growing Plants.

IN Mr. Peter Henderson's article on "Floriculture in America," published in the first number of this journal, he spoke of the great love of Americans for cut flowers, and contrasted it with the love of the residents of foreign cities for growing plants. The difference which he notes, and which he illustrates by instructive figures, must strike every keen observer of national habits and tastes. There is nothing in London or Paris to rival the display of cut flowers in our florists' shops in winter. But, on the other hand, we have nothing which even approaches in magnitude or beauty the spectacle afforded at every season of the year by the plant markets of Paris. The surroundings of the Church of the Madeleine, on certain days of the week in spring and summer, offer one of the traditional sights which every tourist feels bound to see when he first visits Paris; and even stay-at-homes are familiar with the brilliancy of the scene, for there is none which has more often attracted the brush of the painter. French artists of the moment are especially fond of paint-

ing the streets of Paris, and if their gift lies in the direction of brilliant color, where could they turn for a better subject than to these crowded pavements, where gaily dressed ladies and children and white-capped nurses thread the rows of gorgeous blossoming plants, to bear away, now a huge yellow Chrysanthemum, or a tall red Rose-tree, and now a tiny pot, bought for a couple of cents, of Forget-me-nots or Pansies? And in every one of our home exhibitions of art, especially in those devoted to water-color painting, the individual plants of the French flower-market are brought beneath our eyes, each enveloped in one of those great cones of stiff white paper without which no self-respecting Parisian plant would be seen in public. But where shall one go in New York to find such scenes?

In Germany, although such gorgeous out-door displays of plants as we find in Paris are less common, there are always plenty of market-booths in the public squares where blooming plants may be bought in great variety; and in winter very beautiful specimens may be had from every florist. In the latter weeks of winter Azaleas are the favorites, and during all the preceding weeks Crocuses and Hyacinths, Lilies-of-the-Valley and Cyclamens, as well as Roses, are grown and sold in vast quantities. The custom of sending flowers as gifts to friends is very popular in Germany, although it has, of course, never been carried to such extravagant lengths as with us. But even more often than cut flowers, flowering plants are used for the purpose—either a single fine specimen, solitary in its pot, or a group of flowers of the same kind, or a pretty arrangement of contrasting kinds grown in round, wide, shallow, inexpensive baskets of bark. Such a basket filled, for example, with Hyacinths of different colors, or with a variety of Tulips, or with a pure white mass of Lilies-of-the-Valley, is more beautiful than any bunch of these flowers; and it will last much longer even in the atmosphere of a hot, dry living-room. Not the most splendid bunch of Roses is more lovely than a fine Azalea in full flower; and if the plant is purchased in bud and left to flower in its new owner's possession, she will be sure of several weeks' instead of several hours' enjoyment.

We have no wish to find fault with the love of cut flowers, which is so distinctively an American characteristic. Yet we think our almost exclusive preference for them instead of for flowering plants is a misfortune, especially to persons of modest means, who, by a different expenditure of their money, might buy more lasting pleasures.

The wood of the Liquidambar has now become an article of considerable commercial importance in this country. As long as black walnut and cherry were abundant and cheap it was considered worthless by the manufacturers of furniture, but now more than three million feet are annually used by them in this city alone. Blocks of this wood have been employed for several years in paving the streets of some western cities, and in the South liquidambar shingles have long been common. This wood is nearly as heavy as black walnut, but not as strong; it is tough and close-grained and can be made to take a beautiful satiny polish. Its color is bright brown tinged with red. This wood, however, shrinks and splits badly in seasoning and this is its great defect. But it has now been found that if the wood, as soon as it comes from the saw, can be steamed for fifteen or twenty hours, according to the thickness of the boards, and then carefully kiln-dried, it will not warp or twist. This is a discovery of great importance and is likely to have a considerable influence upon the lumber supply of the country. The Liquidambar is a large, and in some parts of the country a very common tree. It frequently reaches a height of a hundred feet with a trunk diameter of over six feet. It flourishes in the low and often inundated river-swamps of the South and West, where, mixed with the Cottonwood and the Big Tupelo, it covers vast areas which can never be brought under cultivation from lack of sufficient drainage and will always remain

in forest. These river-swamps, too, will always be protected from fire by the moisture of the soil. Our store of liquidambar, therefore, will not be very soon exterminated probably, and, if cut judiciously, will supply the demand of furniture manufacturers for a long time to come.

Few people, probably, realize the extent of the plantations of American Grape-vines which have been made in Europe since the discovery that they have sufficient vigor to survive the attacks of the Phylloxera, and therefore make the best stocks upon which to work the different wine-grapes in regions affected by this pest. From a recent issue of the *Revue Horticole* it appears that in the year 1881 about 22,000 acres were planted in France with American Grapes, while in 1887 not less than 416,000 acres were planted, the total acreage for these seven years amounting to 1,200,000 acres. These figures give an idea of the immense damage the Phylloxera has inflicted upon French agriculture.

Plan for a Small Homestead.

Conditions and Requirements.—The site is upon the south face of a bluff, the surface of which is so steep that the rectangular street system of the city, to the east and south, had not been extended over it. The diagonal streets, *M* and *N*, have been lately introduced and building lots laid off on them, as shown in Figure 1. The triangular space between *L* and *M* Streets is a public property containing the graves of some of the first settlers of the region. Its northern and western parts are rocky and partly covered by a growth of native Thorns and Junipers, east of which there are Willows and other planted trees. At *A* there is a meeting-house and parsonage. Arabic figures show elevations above city datum.

The lot to be improved is that marked *IX*. The usual conveniences of a suburban cottage home are required, and it is desired that it should be made more than usually easy and convenient for members of the household, one of whom is a chronic invalid, to sit much and be cheerfully occupied in out-of-door air and sunlight. A small fruit and vegetable garden is wanted and a stable for a single horse and a cow, with carriage room and lodgings for a man. Water for the house, garden and stable is to be supplied by pipes. There is a sewer in *M* Street.

The problem is to meet the requirements thus stated so snugly that the labor of one man will be sufficient, under ordinary circumstances, to keep the place in good order and provide such gratification of taste as with good gardening management the circumstances will allow.

The north-west corner of the lot is 21 feet higher than the south-east corner, the slope being steeper in the upper and lower parts than in the middle. There is a small outcrop of a ledge of limestone about 30 feet from the south end, and the ground near it is rugged and somewhat gullied. *M* Street, which has a rapid descent to the eastward, opposite the lot, was brought to its grade by an excavation on the north side and by banking out on its south side the bank being supported by a

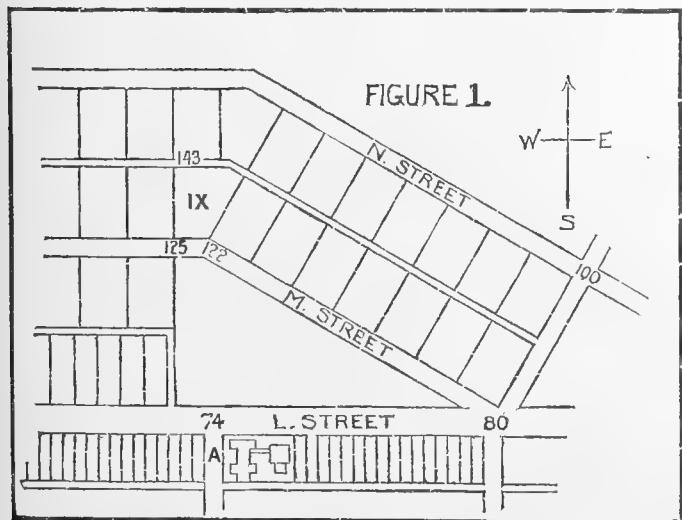
retaining wall. The excavation has left a raw bank two to five feet high on the street face of the lot.

Looking from the middle part of the lot over the roof of the parsonage a glimpse is had of a river, beyond which, in low bottom land, there is a body of timber, chiefly Cottonwood, over which, miles away, low, pastured hills appear in pleasing undulations.

The narrower frontage of lot *IX*, its irregular outlines, its steepness, its crumpled surface, the raw, caving bank of its street face and its apparent rockiness and barrenness, had made it slower of sale than any other on the hill streets, and it was, accordingly, bought at so low a price by its present owner that he is not unwilling to pay liberally for improvements that will give him such accommodations upon it as he calls for. From the adjoining lots and those higher up the hill to the north the view which has been referred to, over the roof of the parsonage, is liable to be curtained off by trees to grow, or houses to be built, on the south side of them. Either this liability has been overlooked or the view has been considered of little value by those who have bought them. "Most people," says the owner of lot *IX*, "find their love of Nature most gratified when they have a trim lawn and a display of flowers and delicacies of vegetation upon it in front of their houses. I find Nature touches me most when I see it in a large way; in a way that gives me a sense of its infinitude. I like to see a natural horizon against the sky, and I think that the advantage we shall have here in that respect will fully compensate us for the want of a fine lawn-like front, provided the place can be made reasonably convenient." Fortunately his wife is essentially like-minded. "I am a Western woman," she says, "and would not like to live in a place that I could not see out of without looking into the windows of my neighbors."

Controlling Landscape Considerations.—The only valuable landscape resource of the property lies in the distant view eastward from it. Looking at this from the house place, it can evidently be improved by placing in its foreground a body of vigorous, dark foliage, in contrast with which the light gray and yellowish greens of the woods of the river bottom will appear of a more delicate and tender quality, and the grassy hills beyond more mysteriously indistinct, far away, unsubstantial and dreamy. Such a foreground can be formed within the limits of lot *IX*, and, strictly speaking, the forming of it will be the only landscape improvement that can be made on the place. It is, however, to be considered, that when the middle of the lot is occupied by a house but small and detached spaces will remain to be furnished with verdure or foliage, and that anything to be put upon these spaces will come under direct and close scrutiny. Hence nothing should be planted in them that during a severe drought or an intense winter or in any other probable contingency is likely to become more than momentarily shabby. Further, it is to be considered, that when the eye is withdrawn from a scene the charm of which lies in its extent and the softness and indefiniteness, through distance, of its detail, the natural beauty in which the most pleasure is likely to be taken will be of a somewhat complementary or antithetical character. But to secure such beauty it is not necessary to provide a series of objects the interest of which will lie in features and details to be seen separately, and which would be most enjoyed if each was placed on a separate pedestal, with others near it of contrasting qualities of detail, each on its own separate pedestal. It may be accomplished by so bringing together materials of varied graceful forms and pleasing tints that they will intimately mingle, and this with such intricate play of light and shade, that, though the whole body of them is under close observation, the eye is not drawn to dwell upon, nor the mind to be occupied, with details. In a small place much cut up, as this must be, a comparative subordination, even to obscurity, of details, occurring as thus proposed, and not as an effect of distance, is much more conducive to a quiescent and cheerfully musing state of mind than the presentation of objects of specific admiration.

Anatomical Plan.—The important common rooms of the family and the best chambers are to be on the southern side of the house, in order that the view over the river, the southwestern breeze and the western twilight, may be enjoyed from their windows. (See figure 2.) It follows that the kitchen and the main entrance door to the house are to be on its north and east sides. Were it not for excessive steepness, the best approach to the house would be on a nearly straight course between its east side and the nearest point on *M* Street—i. e., the south-east corner of the lot; this partly because it would be least costly and most convenient, and partly because it would make the smallest disturbance of the space immediately before the more important windows of the house. But to get an approach of the least practicable steepness the place will be entered



at the highest point on *M* Street—*i. e.*, the south-west corner; then a quick turn will be taken to the right, in order to avoid the ledge, then, after passing the ledge, another to the left. On this course a grade of one in twelve and a half can be had. (The grade on the shortest course would be one in seven.) Opposite the entrance to the house there is to be a nearly level space where carriages can rest.

The caving bank made by the cut for grade of *M* Street requires a retaining wall four feet high along the front of the lot. This will allow a low ridge, nearly level along the top, to be formed between the wheelway and the street, making the wheelway safer and a less relatively important circumstance to the eye.

Even in the part of the lot chosen, as being the least steep, for the house, a suitable plateau for it to stand upon can only be obtained by an embankment on the south and an excavation on the north. The embankment is to be kept from sliding down hill by a wall ten feet in front of the wall of the house. This retaining wall is to be built of stained and crannied, refuse blocks of limestone which have been formerly thrown out from the surface in opening quarries on the back of the bluff. They are to be laid without mortar and with a spreading base and irregular batter. Where the ledge can be exposed they will rest upon it, and the undressed rock will form a part of the face of the wall. A railing two and a half feet high is to be carried on the top of the retaining wall, and the space (*b*) between this and the wall of the house will be an open terrace upon which will open half-glazed French windows on the south of the library, parlor and dining-room. At *c* (figure 2) there is to be a little room for plants in winter, the sashes of which are to be removed in summer, when the space is to be shaded by a sliding awning. At *d* a roof covers a space large enough for a tea table or work table, with a circle of chairs about it, out of the house proper, forming a garden room. This roof is to be sustained by slender columns and lattice-work, and lattice-work is to be carried over it and the whole to be overgrown with vines (Honeysuckle on one side, Wistaria on the other, the two mingling above). The space *ee* is reserved for a tiny pleasure garden, to be entered from the house and to be considered much as if, in summer, it were a part of it carpeted with turf and embellished with foliage and flowers. At *f* there is to be a retired seat for reading and intimate conversation, and east of this an entrance to the service gardens, to be described later. The laundry yard, *h*, and the kitchen yard, *i*, are to be screened by high lattices covered by Virginia Creeper. The court yard, *jj*, is to be smoothly paved with asphalt blocks or fire brick, which it will be easy to thoroughly hose and swab every day. In one corner of it is a brick ash house, *k*; in another a gangway to the cellar and a chute for coal, *l*; in another a dog house, *m*. The stable and carriage house are entered from the court yard, but hay will be taken into the loft from a wagon standing in the passage to the back lane. At *n* is the stable yard.

Landscape Gardening.—The soil to be stripped from the sites of the house, terrace, stable, road and walks, will be sufficient, when added to that on the ground elsewhere, to give full two feet of soil wherever needed for turf or planting.

Trenches, nowhere less than two feet deep, are to be made on each side of the approach road south of the terrace and to be filled with highly enriched soil, the surface of which is to slope upward with a slight concavity as it recedes from the approach. The base of the wall is to merge irregularly into this slope. The space between the terrace and the street is so divided by the approach, and, in the main, is so steep and dry, that no part of it can be well kept in turf, nor can trees be planted in it, because they would soon grow to obstruct the southward view from the house and terrace. The steep dry ground and the rock and rough wall of this space are to be veiled with vines rooting in the trenches. The best vine for the purpose is the common old clear green Japan Honeysuckle (*Lonicera Halliana*). In this sheltered situation it will be verdant most, if not all, of the winter, and blooming, not too flauntingly, all of the summer. It can be trained not only over the rough sloping wall of the terrace, but also over the railing above it, and here be kept closely trimmed, so as to appear almost hedge-like. Also it may be trained up the columns of the shelter and along its roof; the odor from its bloom will be pleasing on the terrace, and will be perceptible, not oppressively, at the windows of the second story. Other vegetation is to be introduced sparingly to mingle with it, the wild Rose and Clematis of the neighborhood; the Akebia vine, double flowering Brambles, and, in crevices of the wall, *Rhus aromatica*, dwarf Brambles, *Cotoneaster microphylla*, Indian Fig, Aster, and Golden Rod, but none of these in conspicuous bodies, for the space is not too large to be occupied predominately by a

mass of foliage of a nearly uniform character. Near the south-west corner of the pleasure garden, *Forsythia suspensa* is to fall over the wall, and, also, as a drapery in the extreme corner (because the odor to those near the bloom of it is not pleasant), Matrimony vine (*Lycium vulgare*). Upon the walls of the house east of the terrace, Japanese Ivy (*Ampelopsis Veitchii*) is to be grown, and before it a bush of the fiery Thorn (*Crataegus Pyracantha*). For the ground on the street side of the approach, *pp*, smooth-leaved shrub evergreens would be chosen were they likely to thrive. But both the limestone soil and the situation is unfavorable to them. Next, a dark compact mass of round-headed Conifers would best serve the purpose of a foreground to the distant view, but there are none that can be depended on to thrive long in the situation that could be kept within the required bounds except by giving them a stubbed and clumsy form by the use of the knife. The best available material for a strong, low mass, with such deep shadows on the side toward the terrace as it is desirable to secure, and which is most sure to thrive permanently in the rather dry and hot situation, will be found in the more horizontally branching of the Thorn trees (*Crataegus*), which grow naturally in several varieties on other parts of the hill. Their heads may be easily kept low enough, especially in the case of the Cocks spur (*C. Crus-galli*), to leave the view open from the terrace without taking lumpy forms. But as a thicket of these spreading thorn bushes, fifty feet long, so near the eye, might be a little stiff and monotonous, a few shrubs are to be blended with them, some of which will send straggling sprays above the mass and others give delicacy, grace and liveliness, both of color and texture, to its face. Common Privet, red-twigged Dogwood, common and purple Barberry, *Deutzia scabra*, Spice-bush and Snowberry may be used for the purpose. American Elms have already been planted on the lot adjoining on the east. The Wahoo Elm (*Ulmus alata*) and the Nettle tree (*Celtis occidentalis*) are to be planted in the space between the approach and the boundary. They will grow broodingly over the road, not too high, and mass homogeneously with the larger growing Elms beyond. Near the stable two Pecans (*Carya oliviformis*) are to be planted. The three trees last named all grow in the neighboring country and are particularly neat and free from insect pests. A loose hedge of common Privet having the effect of a natural thicket is to grow along the boundary. No other shrub grows as well here under trees.

As the pleasure garden is to be very small, to be closely associated with the best rooms, and to be not only looked at but used, it must be so prepared that no excessive labor will be needed (as in watering, mowing, sweeping and rolling), to keep it in superlatively neat, fresh and inviting condition. No large trees are to be grown upon or near it by which it would be overshadowed and its moisture and fertility drawn upon to the injury of the finer plantings. It must be easy of use by ladies when they are shod and dressed for the house and not for the street. Its surface is to be studiously modeled with undulations such as might be formed where a strong stream is turned aside abruptly into a deep and narrow passage with considerable descent. It will be hollowing near the house and the walk, and will curl and swell, like heavy canvas slightly lifted by the wind, in the outer parts. Wherever it is to be left in turf the undulations are to be so gentle that close mowing, rolling and sweeping will be easily practicable. The upper and outer parts are to be occupied by bushy foliage compassing about all the turf; high growing shrubs next the fences and walls; lower shrubs before them; trailers and low herbaceous plants before all. But there must be exceptions enough to this order to avoid formality, a few choice plants of each class standing out singly. The bushes are to be planted thickly, not simply to obtain a good early effect, but because they will grow better and with a more suitable character in tolerably close companionship. As the good sense of the lady who is to be mistress of this garden ranges more widely than is common beyond indoor matters of taste, it may be hoped that due thinnings will be made from year to year and that the usual mutilation of bushes under the name of pruning will be prevented.

The following little trees and bushes may be used for the higher range: The common, trustworthy sorts of Lilac, Bush-honeysuckle, Mock-orange, Forsythia, Weigelia, the Buffaloberry (*Shepardia*), common Barberry, the Cornelian Cherry and the red twigged Dogwood. In the second tier, Missouri Currant, Clethra, Calycanthus, Jersey Tea, Japanese Quince, Japanese Mahonia, Spiræas, and the Mezereum Daphne.

In the third tier, *Deutzia gracilis*, Oregon Grape, flowering Almond (white and red), *Spiræa Thunbergii* and *S. Japonica*, Waxberry, *Daphne Cneorum*, small-leaved Cotoneaster, and the Goatsbeard Spiræa. The Virginia Creeper is to be planted against the walls of the house, Chinese Wistarias near the

garden room. Oleanders, Rhododendrons, Figs, Azaleas and Bamboos, grown in tubs, are to be set upon the terrace in summer. They are to be kept in a cold pit during the winter.

The service garden (gg, Fig. 2) will have a slope of one to five inclining to the south. It is intended only for such supplies to the house as cannot always be obtained in the public market in the fresh condition desirable, and is divided as follows:

- g 1. Roses and other plants to provide cut flowers and foliage for interior house decoration;
- g 2. Small fruits;
- g 3. Radishes, salad plants, Asparagus, Peas, etc.;
- g 4. Mint, Parsley, Sage, and other flavoring and garnishing plants for the kitchen,
- g 5. Cold-frame, wintering-pit, hot-beds, compost-bin, manure-tank, garden-shed and tool-closet.

BROOKLINE, MASS., 14th April, 1888.

Fred'k Law Olmsted.

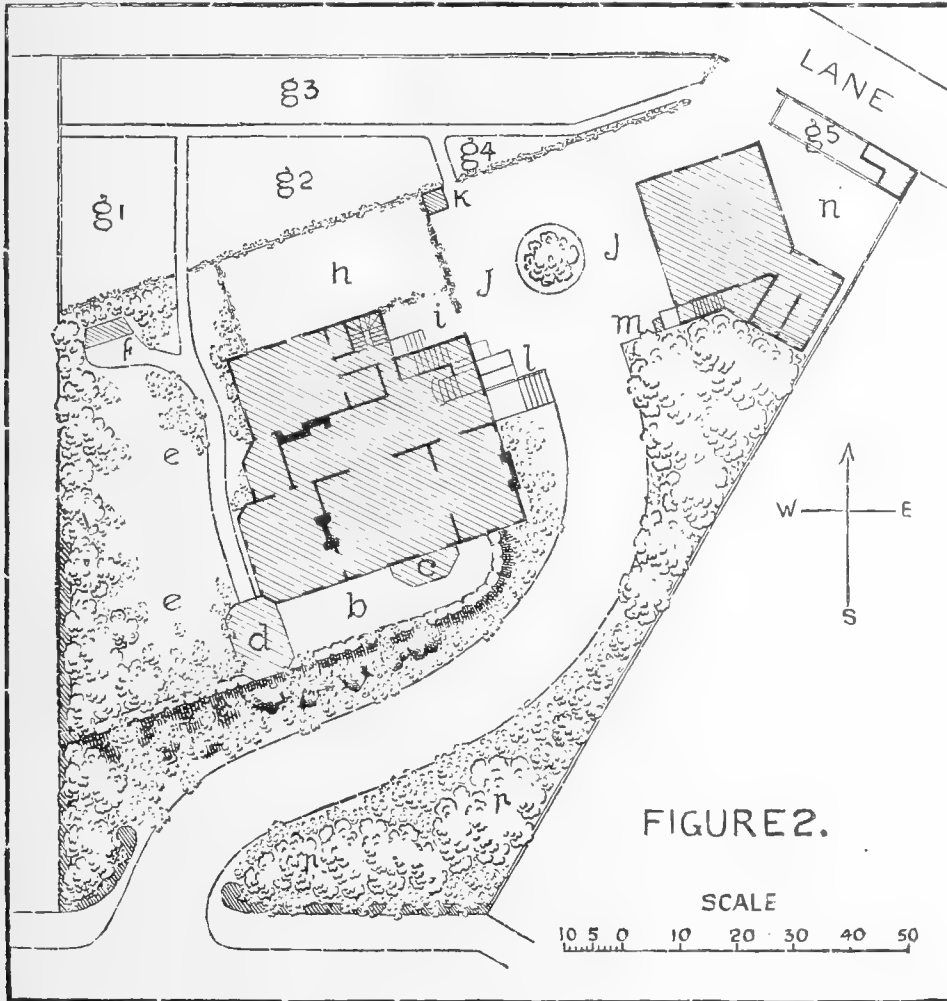
forces well even earlier than the present date, and I imagine that it would be invaluable for market florists. It is one of the *Rosa polyantha* hybrids of which Ma Parqueritte and Anna Maria Montravel are other beautiful examples.

Among other noteworthy flowers were the new Cinerarias, shown by Mr. James, who for several years past has made the improvement of this flower the study of his life. He has changed starry flowers into perfectly circular flowers with overlapping florets, besides impressing into his "strain" new self-tints, and combinations of tints, in zones and stripes. Some critics hold that the improved Cineraria has lost the elegance and beauty of the old-fashioned Cineraria in the severely symmetrical flower. But the balance of opinion among florists is in their favor, and this strain of seeds always commands the highest prices, which is a fair test of popular favor. The very finest varieties are named, and, of course, are propagated from cuttings, though in some cases the sorts are perpetuated true from seed. There was a large gathering of these flowers on exhibition and of the three sorts certificated the finest was a pure white with purple centre, named Maria. Another, named Irene, had the colors purplish violet, carmine and white arranged in zones, and a third, named Favorite, rich carmine and white. If one could place one of these plants beside the original *Cineraria cruenta* of the Canary Islands, from which this garden race has descended, he could better appreciate the enormous strides that have been made in the improvement of the flower. The pure *C. cruenta*, from seed gathered in the Canaries, is in bloom just now in Kew Gardens, and the contrast of the florist's strain with it is remarkable.

One would think that a special feature would be made of forced shrubs at these early spring shows, but with the exception of a fine mass of forced white Lilac from a market florist, the old *Deutzia gracilis*, and a few specimens of *Laburnum*, and other shrubs, there was nothing remarkable in this way. The forced Lilacs were the admiration of every one, the plants being so fine and thickly hung with large dense clusters of pure white bloom. They came from Mr. Dorst, of Richmond, one of the market florists whose success in forcing Lilac is now well known. He is, in fact, one of the few florists who have proved that Lilacs can be forced profitably. Ever since October last he has sent almost daily supplies to Covent Garden. His flowers always look fresher than the imported bloom from France, and consequently fetch a higher price. The best variety he uses is Charles X., which in the ordinary flower season is purple, but when forced in the dark is pure white. Enormous quantities of Lilac plants are grown by this florist, and all are subjected to preparatory treatment in pots a year or so before wanted for forcing, so as to get them well rooted and with strong, well ripened wood. The bushes are pruned severely, leaving only the strongest growths, and then are gradually introduced into heat in batches, from October onwards. The forced supply lasts till past Easter, when it is in much demand.

W. Goldring.

London, March 22d, 1888.



Foreign Correspondence.

London Letter.

With the equinox our spring flower shows begin, the most important being that of the aristocratic Royal Botanic Society, Regents Park, on the 21st of March. This conservative body never dreams of innovation, never tolerates a change in the prize schedule, so that the masses of Hyacinths and Tulips, Azaleas and Cyclamens, repeat themselves at each spring exhibition. Nevertheless, hither throng crowds of the *élite* of London society. Forced Roses made an interesting feature, and none of the sorts shown seemed to win so many admirers as the new Lady Alice, which was even finer here than at South Kensington, and the judges awarded it a certificate of merit. The pretty little Mignonette Rose, with clusters of button-like rosettes of pale pink, was a much admired flower. It is extremely floriferous and

forcing Lilac is now well known. He is, in fact, one of the few florists who have proved that Lilacs can be forced profitably. Ever since October last he has sent almost daily supplies to Covent Garden. His flowers always look fresher than the imported bloom from France, and consequently fetch a higher price. The best variety he uses is Charles X., which in the ordinary flower season is purple, but when forced in the dark is pure white. Enormous quantities of Lilac plants are grown by this florist, and all are subjected to preparatory treatment in pots a year or so before wanted for forcing, so as to get them well rooted and with strong, well ripened wood. The bushes are pruned severely, leaving only the strongest growths, and then are gradually introduced into heat in batches, from October onwards. The forced supply lasts till past Easter, when it is in much demand.

New or Little Known Plants.

Hymenocallis humilis.*

THE so-called *Panpratium*s of the United States are represented in our illustration for this number. The true *Panpratium*s, however, are all natives of the Old World, and are characterized by having the tube of the flower considerably dilated upward, and therefore funnellform. The crown which unites the filaments is also usually lobed, and the cells of the fruit are several-seeded. The American species all belong to the genus *Hymenocallis*, which has the tube narrowly cylindrical and only two ovules in each cell of the ovary. They are found in marshes and on river banks in the southern Atlantic and Gulf States, mostly near the coast, though one species, which is supposed to be the same as the *H. rotata* of the coast, is found in Tennessee and Kentucky.

The figure here given shows one of two species which were discovered in Florida by Dr. Edward Palmer in 1874. *H. humilis* is a low and slender species, the smallest of the genus. The bulb appears to be attached to a rather thick rootstock, and sends up a few short narrow leaves and a short scape which bears a single flower. The linear segments are greenish, as are also the anthers, while the broadly funnellform truncate crown is white. The plant was found on the banks of the Indian River in flower early in March, but it has not been again collected. Dr. Palmer speaks of it as common in the grassy meadows near the river, a free bloomer, and very showy, and the most attractive plant found by him in that region. S. W.

Cultural Department.

Hybrid Aquilegias.

POSSIBLY no genus of plants more readily admits of a perfect hybridization between the different species than the *Aquilegia*. For this reason it is almost impossible to preserve the seedlings pure should the parent plant have grown near any other species. Even when separated, the pollen will be distributed through insect agency, and the new generation in almost every case will possess marked characters, differing from the species. Taking advantage of this peculiarity, hybridizers have produced some curious and beautiful strains, and the only difficulty in the way of its permanent usefulness is the trait alluded to, that of so easily departing from any fixed type.

About twenty-five years ago Dr. C. C. Parry, then engaged in studying the Flora of Colorado, happened upon *A. carulea*, Torr., and with the herbarium specimen sent the writer was a small packet of seeds which were carefully grown, and the plants served as the female parents in a remarkable series of experiments in hybridization with several other species. One of the most instructive and valuable crosses was from the pollen of the white form of *A. vulgaris*; the result being flowers identical in form with *A. carulea*, but pure snow-white in color.

In addition, as if to demonstrate the extent of its possibilities, two of the seedlings yielded perfectly double white blooms of the size and form of *A. carulea*, even retaining the peculiar long curved spurs of that species.

In the collection of seedlings were flowers of almost every imaginable tint, but all showing, in a marked degree, the influence of the *carulea* type. Subsequent efforts in the same direction with other species gave some interesting results, but none were more valuable than the above, unless we except a little bed of seedlings where the male parent was also our eastern species, *A. Canadensis*. The progeny in this case almost universally exhibited blooms showing various shades of red, but retaining all the other characters of the mother plant.

**H. HUMILIS*, Watson, *Proc. Am. Acad.*, xiv. 301. Bulb half an inch thick or more, upon a rootstock, covered by the broad sheathing bases of the leaves, which are four to six inches long by about two lines broad; scape scarcely equaling the leaves, one-flowered; segments of the spathe narrowly linear; flowers greenish, the tube fifteen lines long and shorter than the linear segments of the perianth; crown short, not narrowed at base, truncate between the erect filaments, which are a third shorter than the perianth and style; anthers greenish; ovary oblong, becoming an inch long in fruit.



Fig. 23.—*Hymenocallis humilis*.

A few showy hybrids were produced by crossing *A. formosa* and *A. chrysantha* with *A. carulea*, but the result did not prove so satisfactory as the foregoing, the colors being undecided, and the form, as a rule, greatly inferior to the parents. The development and fixing of new forms in flowers, as practiced on the numerous seed-farms in Europe, fully demonstrate, that by a systematic course of selection for a series of years, almost any peculiarity of color or form may be perpetuated from seeds and made to retain its idiosyncrasies thereafter. Whether this has been attempted with *Aquilegia* hybrids I do not know, although the numerous and very distinct colors of *A. vulgaris* will come true to name almost invariably. Division of the root was attempted and for several years the finest of these forms were retained, but finally all passed out of existence. Josiah Hoopes.

Rhus cotinoides.—Three years ago a small plant of this rare species was set in our nursery, where the ground is good and the situation well sheltered. It has grown vigorously, and made a single stemmed, well branched specimen, eight feet high. But it has been protected with barrels in winter. Last winter we gathered and tied the branches together and to a

long stake, and over these set three barrels, bottomless and headless, one on top of the other, and kept in place by being lashed between three long stout stakes. When uncovered, about the 1st of April, the branches were living to the tips, and nowhere does the tree show the least sign of injury from the winter. It has now been transplanted to a permanent position, as an isolated specimen, on the lawn, and consequently was cut in severely. It has not yet blossomed with us. But its handsome foliage and the bright red tinge of its leaf stalks and venation render it a desirable plant, even without flowers.

"It is in Alabama a small, wide branching tree, nine to ten metres in height, with a trunk sometimes 0.30 metre in diameter; on limestone benches from 700 to 900 feet elevation, in dense forests of Oak, Ash, Maple, etc.; local and very rare; not rediscovered in Arkansas or the Indian territory, in Alabama nearly exterminated."

Our specimen has been grown in an open sunny exposure and has not shown the least injury from full sunshine. W. F.

Heuchera sanguinea.—This new and handsome introduction from Mexico is likely to become the most popular of the genus as at present known. All Heucheras have elegant foliage. *H. pubescens* is generally grown for this reason alone. Last fall, with a view to increase our stock of *H. sanguinea*, which was limited to one small plant, all the crowns were cut off close to the rootstock. Placed in sand in a cool pit they rooted easily. We thus obtained a dozen plants which have bloomed persistently nearly all winter. We have also a number of seedlings, and, if we are fortunate enough to save them, in the course of time clumps in sufficient quantity can be obtained for forcing, like *Astible Japonica*, for winter blooming. The plants are in 4-inch pots, and have been grown in a night temperature of 40° to 45°. The flower stems are wiry, and self-supporting, blooming from 3 to 5 inches of their length, in a one-sided racemose cyme of red, tubular flowers of considerable substance, which have the excellent quality of being handsome in bud, and of lasting two or three weeks in a cool house. T. D. Hatfield.

Myosotis dissitiflora splendens is a variety of a very beautiful perennial Forget-me-not with flowers fully double the size of the common species (*M. palustris*). They are pink or shaded with pink when first open, but soon change into a beautiful clear blue. This plant is not quite hardy, but is well worth the protection of a cold-frame in winter. If seed is sown in June or July, the young plants will be strong enough by autumn to come through the winter safely, and can be transplanted into the open border, where they will bloom profusely during the month of May. Plants taken from the frame in February or March, and introduced into moderate heat, bloom freely in a few weeks, and a pan of this plant in flower is one of the most beautiful objects imaginable. This plant was sent to this country several years ago by Herr Leichtlin. S.

Sempervivums.—These form pretty and appropriate patches and mats about the stones in the rockery. They like an open and comparatively sunless situation, as on the northern slopes, but very much dislike to be shaded overhead by trees, shrubs or other plants. Most of the species are quite hardy. *Sempervivum globiferum*, *S. montanum*, *S. tomentosum*, *S. triste*, *S. calcareum*, *S. soboliferum*, *S. arenarium*, and some of the varieties of *S. tectorum*, are as good as any. The prettiest, perhaps, is the white cobweb *S. tomentosum*; *S. triste* is dark crimson, and *S. calcareum*—often, but erroneously, called *S. Californicum*—is a little tender. None of the Cape of Good Hope species are hardy. Now is a good time to transplant them; use the small or middle-sized heads only, as the large ones will bloom in a month or two, then die off and leave the place ragged.

"Dutch" Bulbs, such as Hyacinths, Tulips and Narcissus, that have been forced, should be stored close together in some lightly shaded place out-of-doors and kept watered so long as the leaves remain green. When the leaves die off stop watering altogether, shake out and gather the bulbs, keeping each kind by itself, and keep them in-doors till next August or September, when they may be planted thickly in rows in the garden. Next spring they may yield a few flowers, but of poor quality. The Tulips, after a few years, may recover their original strength, but the Hyacinths will only produce second-rate spikes at best. They are of no use whatever for forcing a second time.

Lilium candidum, if forced this year, should be planted out or thrown away, as to force the same bulb again next year would

be labor lost. But *L. longiflorum* and its varieties may be grown along and forced year after year and do well every season. Keep them well watered and in vigorous growth as long as the leaves stay green, then dry them off and keep them perfectly dry, but still in the earth in the pots, till next fall, when re-pot them, keeping the large bulbs in pots by themselves, and the small ones in pots by themselves, and carefully preserve every little bulblet found along the joints of the underground stems. In the *Harrisii* form most all these little bulbs, even in three or four inch pots, will bloom next spring.

Spring Flowers.—Many of our earliest flowering plants grow well in shady places. They start into growth early and bloom before the trees begin to shade them. Their growth is rapid, and before midsummer they have completed their season's work and gone to rest. Among these are Anemones, Violets, Twin-leaf, Bloodroot, Winter Aconite, Trilliums, Rue Anemones, Spring Orobolus, Pulmonaria, Lungwort, and many bulbous plants. At the same time we must bear in mind that Moss Pink, Rock Cress, Aubretia, evergreen Candytuft, and a good many others, if grown in shady places, will dwindle and die out after awhile. A safe rule to observe is, grow the short-lived deciduous kinds in shady places, and the evergreens mostly in sunny exposures.

Cutting Asparagus.—It is the practice of most gardeners to cut the large shoots of Asparagus only and leave the weaker ones to grow for the purpose of making strong roots and therefore strong shoots next year. A better custom is that adopted by Long Island gardeners, who cut everything clean every day. When the plants are all allowed to grow after the cutting season is over the strong plants assert themselves, overshadow the weaker ones and set the buds for next year's crop. This gives a larger percentage of strong buds every year. S.

Andromeda floribunda is now in good bloom. While it succeeds well in moist ground and on the north side of a wooded belt, it seems to dislike any open, sunny exposure or dry ground. *A. Japonica* is far more accommodating, but as it flowers so early, it is of little use in the North as a flowering shrub.

Pansies.—If these are to be kept in good bloom for a long time, they should be watered copiously and kept moderately thin by pulling out the poorest plants. After the middle of May a lath shading placed over, but a few feet above the beds, will help them considerably. The Bugnot, Cassier and Improved Trimardeau strains are as fine as any. H. F.

Effect of the Winter on Evergreens.

THE past winter was not unusually severe. During the summer we had abundant rain, and the ground was well soaked before frost set in; trees and shrubs made capital growth and the wood ripened up well. There was fine open working weather till the middle of December, and about the end of the month some rough cold weather. January began with wind and rain, but after New Year's, and till the middle of the month, there was fine, but somewhat cool weather; on the 16th there were 19° of frost, and from that time till the end of March we have had the most trying weather—cold, wet, stormy, changeable, icy—that I have any record of or remember. But while we had zero weather two or three nights, only once did the temperature fall as low as 3° below zero. At some one time during each of the four preceding winters the temperature has fallen to 6° below zero, but never for more than one night at a time, and usually only once, never more than twice the same season. But our trees suffer a good deal from ice storms. There is often a drizzling rain, and 6° to 10° of frost at the same time; this coats the trees completely with ice, and the branches break under the load. If a bright or warm day succeeds this icing, trees escape pretty well, but should it freeze harder, and a brisk north-west wind set in, a good deal of damage is done by the branches lashing against each other and breaking. Every succeeding year it becomes more and more apparent that in order to have the many beautiful trees and shrubs that will thrive in our climate, in perfection, we must afford them shelter. Wherever the trees have been well sheltered, there all that we would expect to be hardy have wintered well, but wherever there is insufficient shelter, there even hardy trees have suffered. It is not the intensity of the cold so much as the biting winds that injure trees and shrubs.

Pinus mitis has a yellow, unhappy look, but otherwise

the Pines are all right so far as the effects of winter are concerned.

Among Firs, *Abies grandis* has, as usual, got scorched a little; in fact, too much to allow this to be regarded as a reliable species here. One of the Oregon Douglas Firs in a more exposed place than the others has its leaves browned a very little, but not enough to hurt its wood in the least. Others of the Oregon form are not injured in the least. And the Colorado Mountain form, planted in bleak exposures enough, bear no mark of injury whatever. Nordman's, Cilician, Cephalonian, Veitch's, Spanish, and other Firs are uninjured.

No injury is observable among the Spruces. The more we know of the Colorado Blue Spruce the better it appears; its hardihood and capacity to resist severe winter winds seem to be greater than those of our White Spruce. Among Hemlock Spruces, the Japanese *Tsuga Sieboldiana*, so far as we have tried it—and there are fine large specimens here—is a hardier and more manageable tree than the common American species,

more shelter, it is unscathed. Two good sized plants of *Osmanthus illicifolius* formerly grown in tubs, wintered in a shed, and plunged outside in summer, were left out to die last fall. Not only have they survived the winter, but they never looked better than they do now, although close to them the wind scorched a Lawson's Cypress.

Scotch Broom is hurt a little. European Furze where covered with a lath shading and cedar branches is quite safe, but all the tips of the shoots that protruded beyond the protecting material, were killed. The hardy Orange tree (*Limonia trifoliata*), of which there is a small plant here, was wintered under a box filled with dry oak-leaves. It seems all right, but I think it would have been better to have omitted the leaves, as they gathered damp about it. *Phillyrea Vilmoreana* under a box covering has wintered perfectly; *Daphniphyllum glaucescens*, covered in the same way, has also kept well, but lost its upper leaves, and a large plant of *Veronica Traversii* under a box has been killed. *Berberis Japonica* under a lath shading



A Mesquite Forest in Arizona.

All the Retinosporas have wintered well, but the March blizzard spread them a good deal; *R. pisifera* and its varieties suffered most. The Golden Arbor Vitæ (*Thuja orientalis* var.) suffered in the same way. *Thuiopsis dolabrata*, in a moist, sheltered and partially shaded place, is as bright and green and healthy as it can be. Lawson's Cypress, in sheltered ground, is as healthy as any Arbor Vitæ, but wherever its head rose high enough to catch the wind, it was burned. The Sitka Cypress (*Chamaecyparis Nutkaensis*) has wintered well. This plant often behaves strangely here; sometimes one or several plants will die off unaccountably, while others growing along side of, or among them, will not betray any sign of weakness whatever. *Sequoia gigantea* and *Cryptomeria Japonica* have wintered well. All the Arbor Vitæ and Junipers are unscathed, so too are the Yews. Muslin is used to protect the Dovaston Yews, but in one instance where no protection whatever was used the plant is just as sound as those protected. A muslin protection is used around Deodars, *Podocarpus*, *Cephalotaxus*, *Cunninghamia*, and *Phorinina serrulata*, and they all have wintered perfectly—all except the Deodars, a few of the points of whose branches were hurt by rubbing against the cloth. On high, dry ground, where the wind had a sweep at it, the American Holly was browned a little; a few yards off, where a larger plant had

has wintered well. *B. Darwinii* has been killed to the ground, *B. stenophylla*, where protected by a board covering has survived, and where unprotected it has died. *Olearia Haastii*, mulched with leaves and under a lath screen, has been killed to the ground. Spanish Laurel, covered over with barrels (one above the other), has wintered fairly well—that is, the wood is all living, but the plants will lose a good many of their leaves.

Evergreen Rhododendrons never wintered better, and they are well set with flower buds, and promise a good crop of flowers. And besides the large-growing Rhododendrons, such dwarf evergreen ones as *R. ferruginum*, *ovatum*, *myrtifolium* and *Wilsonianum* have wintered well, although *R. ferruginum* has suffered somewhat. *Rhododendron punctatum* lives very well with us. *Azalea amœna* is as perfect as it can be. *Andromeda Japonica* is hardy enough, but as it blooms so early is not of much use as a flowering shrub in this climate. It is not the severity of winter, but the warm sunshine, dry atmosphere and drought of summer, that make *Andromeda floribunda*, in perfection, so great a stranger in these gardens. W. F.

Glen Cove.

"The great secret of good landscape gardening consists in the accurate preservation of the character of every scene, whether the character be originally there or created in it."—*Uvedale Price, "Essay on the Picturesque," London, 1796.*

Notes from the Arnold Arboretum.

THE Arnold Arboretum is a Museum of woody plants,—a great garden in which are being introduced, studied and arranged hardy trees and shrubs from all parts of the world; and which is to be equipped with a dendrological museum, a herbarium and a library.

The establishment is not old, but its nurseries already contain a very large collection of plants; and its influence, gained through the publications of its officers, and by its distribution of new or little known plants, is already considerable; and there is hardly an important collection of plants, in the United States or in Europe, which has not been enriched by contributions from the Arnold Arboretum. Its local influence is very considerable, and the gardens and grounds in and about Boston afford abundant proof of the interest awakened in arboriculture and of the practical advantage which a community can derive from a public establishment of this character.

The final planting of the type-collection of trees in the Arboretum has been considerably delayed by extensive and elaborate road-making, although the typical species of the most important genera, like the Pines, Larches, Spruces, Firs, Chestnuts, Oaks, Walnuts, Hickories, Beeches, Birches, Elms, Ashes, etc., are now permanently arranged and planted. The collection of hardy shrubs is extensive and important, containing about twelve hundred species and well marked varieties, among which there are very few garden hybrids or varieties. This collection is arranged in thirty-seven parallel beds each ten feet wide and two hundred and twenty-five feet long. The genera are arranged in the order adopted by Bentham and Hooker in their "*Genera Plantarum*," and the species are arranged geographically so far as it is practicable to do so, first the North American, then the European, and then the Asiatic plants. The collection is particularly rich in North American shrubs, many of which have been here first introduced into cultivation, and it contains many Chinese and Japanese plants, which, if from northern latitudes, generally do well here. Many genera are well represented; of *Rosa*, for example, there are about sixty species and many natural varieties, of *Berberis* thirty species or more, with some varieties, and of many others a proportionally large number of species.

The proper determination and labelling of the plants in the collection is a serious and difficult labor. Large numbers of plants are sent to the Arboretum every year from other botanical establishments or nurseries. Many of these plants are incorrectly named, and very often the same species or variety comes from half a dozen different places under as many names. All additions as soon as they bloom are verified or determined, and specimens prepared for the herbarium. After their identity has been settled, duplicates are removed; and the collection as it now stands is fairly well classified. Numerous additions, however, are still to be made.

It is proposed to publish in GARDEN AND FOREST, from week to week during the coming season, notes concerning such new, little known, or specially desirable plants in the collections of the Arboretum as may appear worthy of record.

Arnold Arboretum.

J. G. Jack.

The Forest.

The Forest Vegetation of Northern Mexico.—III.

Prosopis juliflora, DC., Mesquit. —No tree carrying through the entire summer so much foliage has greater power to endure arid conditions than the Mesquit. (See illustration, p. 116.) Its leaflets, though numerous, are small, and are wrapped in a thick and close epidermis, which prevents rapid loss of their moisture. Hence it is to be found on the most arid tracts of sand and driest mesas of the plateau region. It is strictly a denizen of plains and valleys, never being seen amongst the growths of hills and mountains. Whilst in the rich and deep soil of the bottoms of valleys of less elevation, as those of Sonora notably, it grows to the stature of a large tree of great value, and forms the heaviest forests of such districts, in the drier situations mentioned, in order to adapt itself to the conditions of its environment, it takes the form of a shrub, widely branching beneath the soil, and rising from two to ten feet only above it. If standing amongst drifting sands, these gather in hillocks amidst such broad clumps of bushes, and heap themselves

higher year by year, as the branches push upward for light and air, until the amount of wood which forms underground in thickened branches and roots is surprisingly large. A similar accumulation of wood in the roots takes place when the Mesquit stands in the more stable soil of mesas and grassy plains, and its branches are occasionally cut away for firewood. It is the gathering of these subterranean stores of fuel that has given rise to the saying that in these regions men have to dig for their wood.

Within the State of Chihuahua it is in a few valleys only, and there growing scattered, that the Mesquit deserves the name of small tree. On the deeper bottom-lands of the Laguna country, through which runs the boundary between the States of Coahuila and Durango, it attains a trunk diameter of eight or ten inches, forms dense growths, and is exclusively cut for railroad ties. In the fertile valleys and more humid climate to the south and east of the State of Zacatecas it is a common tree, and is encouraged to grow in grain fields even, where its falling pods, in shape and size resembling those of the white field Bean, pulpy, sweet and nutritious, are harvested with care as food for man and beast. On account of its fruit the Mesquit possesses great value in the more desert districts. The pods begin to mature before the midsummer rains start the grass, and the half-famished herds are attracted to the bushes by the rich morsels they offer.

Growing with the shrubby Mesquit of the plains and valleys, itself armed at the nodes of its twigs with straight, sharp thorns an inch or more in length, are several other ligneous species of low stature nearly all abundantly furnished with thorns or hooked spines, so that passage through such growths either on foot or in the saddle is difficult and vexatious. Of most frequent occurrence, perhaps, certainly one of the most hateful, is *Celtis pallida*, Torr., which grows in broad clumps six to ten feet high, and forms, with its numerous and dense, often intricately tangled branches, impenetrable thickets. Hardly more dreadful than this or less common is *Mimosa biuncifera*, Benth., standing three to six feet high in widely branching clumps, and laying hold of one passing it with a hundred sharp and strong hooks. *Acacia Greggii*, Gray, the Cat's-claw Mesquit, here less common than the last, and but a shrub, is a similar annoyance. So, too, *Acacia Rameriana*, Schlecht, *Microrhamnus ericoides*, Gray, one to six feet high, and *Condalia spathulata*, Gray, var., six or eight feet, have exceedingly small leaves, and bear a thorn at the end of every branchlet, while *Koberlinia spinosa*, Zucc., is entirely leafless, and its branches are nothing but an aggregation of large thorns. In dry and sandy soil this plant grows but a foot or two high and spreads over broad patches; in valleys of the plateau it is commonly an erect bush; and on the low plains of Sonora I have seen it reaching a stature of fifteen or twenty feet, with a trunk diameter of six to eight inches. A Cactus, *Opuntia arborescens*, Engelm., on the plains five to ten feet high, but seen by Wislizenus in the Laguna country thirty or forty, its surface covered with myriads of needle-like spines and minute barbed points, presents, however, a climax of horrors to him who falls into its widespread arms. Amidst this chaparral the traveler acquires an instinctive dread of contact with any bush; and, if in the saddle, finds that his horse disobeys the rein that would guide him near one. C. G. Pringle.

Wood from the American White Pine, taken from old trees, is held by some authorities to be very durable because it is filled with resin. But this theory seems baseless. The heart-wood of a tree which I examined in Wisconsin contained 6.96 per cent. of solid resin in 100 parts, by weight, of absolutely dried wood substance. A Bavarian tree examined for comparison contained 6.66 per cent. The hot weather of America during the summer season may account for the small difference.

It is a well known fact that the wood of trees with very little resin, like the different species of *Juniperus*, *Sequoia*, *Cupressus* and *Taxodium*, is hardly surpassed in durability by that of any Pine-tree, which contains the highest amount of resin.

Comparing the White Pine with other European and a few American Conifers, I find the following results in regard to specific gravity and resinosity of the wood:

	Specific Gravity (Water 100.)	Per cent. of resin in 100 parts (by weight of dry wood.)
(1.) Long-leaved pine (<i>Pinus palustris</i>), sent to Europe as pitch-pine - - -	78	11.1
(2.) Larch, grown in Tyrol and known as the best and most durable of all European Conifers - - - - -	62	2.8
(3.) Wood of the same tree grown in the milder climate of the plains - - -	55	4.8
(4.) Common European pine (<i>Pinus sylvestris</i>), 113 years old - - - - -	48	5.
(5.) Common European pine (<i>Pinus sylvestris</i>), 235 years old - - - - -	47	4.9
(6.) Red pine (<i>Pinus resinosa</i>), grown in Minnesota - - - - -	41	6.
(7.) European spruce (<i>Picea excelsa</i>), - - -	41	1.6
(8.) " fir (<i>Abies pectinata</i>), - - -	39	1.
(9.) White pine (grown in America), 130 years old - - - - -	39	7.5
(10.) White pine (grown in Bavaria), 80 years old - - - - -	38	6.7

If we arrange the different trees according to the amount of resin found in their heart-wood we have the following order:

- (1.) *Pinus palustris* (as representing the section with 3 needles in one sheath).
- (2.) " *Strobus* - - - - - 5 " " "
- (3.) " *sylvestris* and *resinosa* - 2 " " "
- (4.) The Larch (representing the genus *Larix*).
- (5.) " Spruce " " " *Picea*).
- (6.) " Fir " " " *Abies*).

There cannot be the slightest doubt that the wood of the European Larch is far more durable than that of the European Pine and of the White Pine; still the amount of resin is hardly half as great in a Larch as in a Pine; even the wood of European Spruce is superior in durability to that of the White Pine. From this fact we are bound to say that the specific gravity or the substances that give to the heart-wood its color, are more important factors in determining the durability of a coniferous wood than the amount of resin. I think that the order of resinosity, viz.: *Pinus*, *Larix*, *Picea*, *Abies*, holds good not only for the European, but also for the American representatives of these genera.

H. Mayr.

Correspondence.

To the Editor of GARDEN AND FOREST:

I have been consulted recently by one of our largest dealers in flowers for an inflammation of the skin of the hands and face. The appearances which these parts presented indicated a *dermatitis venenata* of an eczematous type, and the patient expressed the opinion also that the inflammation had been caused by contact with some "poisonous" plant in his shop. He stated, moreover, that some of his assistants were affected in a similar way. The trouble manifested itself in all of them for the first time within a few weeks, and in his own case there had been three distinct recurrences of it within that period. His impression was that it had begun about the time that he had been handling large quantities of *Acacia pubescens* and *Primula obconica*, and he suspected one of these plants to be the cause of the inflammation.

I visited the shop, and found one of the salesmen presenting a similar disorder of the face and hands. The former was red, somewhat swollen, and irritable, and the latter exhibited a papular eruption. Another salesman stated that his face had been irritated, but it presented slight visible changes. There were several other employees in the establishment, whose skins were unaffected. I was told by some of them that it was a well-known trick in green-houses to shake a plant of *Acacia pubescens* over a green workman to excite an itching of the skin. *Primula obconica* was the only plant sold for the first time this season, and large quantities of this had been handled. I made a list of the plants which were then, or had been during the preceding month, for sale in the shop. They were:

- | | |
|---|--------------|
| <i>Acacia pubescens</i> . | Calceolaria. |
| Amaryllis, two varieties. | Calendula. |
| Anemone, Roman (<i>A. hortensis</i>). | Calla. |
| Azaleas. | Camellia. |
| Bouvardia. | Cineraria. |
| | Coreopsis. |

- Cyclamen.
- Cypripedium insigne*.
- " *Harrisii*.
- Cytisus.
- Daisy (*Bellis*).
- Erica.
- Ferns.
- Foliage plants.
- Freesia.
- Galax (leaves).
- Hyacinths.
- Hydrangeas.
- Jonquils.
- Lilium longiflorum*.
- " *candidum*.
- " *Harrisii*.

- Lily-of-Valley.
- Marguerite (*Chrysanthemum frutescens*).
- Mignonette.
- Narcissus.
- Nasturtium.
- Pansy.
- Pink.
- Polyanthus.
- Primulas.
- Roses.
- Smilax.
- Spiraea Japonica*.
- Tulips.
- Violets.
- Wall Flowers.

In my work on "Dermatitis Venenata," recently published, I give a list of eighty-six genera of plants, one or more species of which have been known, on good authority, to produce some degree of inflammation of the skin by contact, but in the collection above named there was but one species which finds a place in my list, viz., *Tropaolum majus*, or Garden Nasturtium. This I have known, in a few instances, to give rise to a severe inflammation of the skin of persons handling it, although it is ordinarily innocuous. It had been always handled, however, by all the persons affected in this instance with impunity. The only other plants above named, which are closely allied to species known to be "poisonous," are the Anemone, *Cypripedium* and Marguerite. Several of the Anemones, especially *A. nemorosa*, *A. patens*, and *A. hortensis*, possess irritative properties, and are even capable of vesicating the skin, but I have no knowledge of such action on the part of that in question. I know, on the authority of the late Professor Babcock, a distinguished botanist of Chicago, that our native *Cypripedium pubescens* is capable of producing as severe inflammation of the skin as *Rhus Toxicodendron*. The French Daisy, or Marguerite, is also, so far as I know, innocent, but its relationship to *Leucanthemum vulgare* and *Maruta cotula*, our White-weeds, makes it a possible object of suspicion.

There can be no doubt, in my opinion, that the cutaneous affection in these cases was of an artificial character, and that the exciting cause is to be sought among the plants recently handled in this extensive establishment. If it be some one of these lately introduced into cultivation and the public market, it is important that it should be discovered. It was suggested as a possible explanation by the proprietor, my patient, that some of the fertilizers used about low-growing plants, as Violets, etc., might have accumulated upon the leaves, and thus be transferred to the hands in making up bunches for sale, or that some of the mildews upon the foliage might, perhaps, be irritating when handled. *Ustilago hypodites*, parasitic upon *Arundo donax*, is a frequent cause of cutaneous inflammation among the workers in this Reed in France, but I am acquainted with no other fungus with such properties.

As it seems probable that the offender in this case is some new plant, I wrote to Professor Goodale asking him if he had known the suspected Acacia or Primula to cause such irritation. He replies:

"Our gardeners say that they have not experienced any trouble from *A. pubescens* or *P. obconica*, but that there is a plant, as yet undetected, which has lately given them a good deal of irritation."

It is with the hope that some cultivator of, or dealer in, flowers may be able to throw light upon the matter, that I send this communication to GARDEN AND FOREST.

Harvard Medical School, Boston.

James C. White.

To the Editor of GARDEN AND FOREST:

Sir.—You will, perhaps, be interested to hear that by far the most beautiful of the southern California shade trees is the Pepper tree. Its graceful form, delicate foliage, feathery sprays of white blossoms, and long pendant clusters of red berries, all present in profusion at every season of the year, make a most effective feature in nearly all the streets and parks of Los Angeles. Its growth is phenomenally rapid and attains great height and breadth.

The shade, though not dense, is exceedingly pleasant, not only by reason of the lovely arabesque of tracery reflected upon the hot yellow soil, but also by the pungently resinous odor which it exhales, and which is at once refreshing, stimulating and soothing to the lungs. Nature seems to have provided in great abundance this "healing balm," as the antidote for the irritating effect of the finely powdered, almost impalpable adobe dust that infests the air of California for the greater

portion of the year. The Pepper tree makes no litter of cast-off leaves, entertains no insects on trunk, branch or leaf, and its light foliage, being in constant motion, shakes off the least particle of dust; while all its neighbors are thickly coated with soil, its shining, sweetly scented boughs are always glossy green.

It grows readily from the seed, and shapes itself perfectly without the aid of the pruning hook.

R. A.

[The so-called Pepper tree (*Schinus Molle*) is a beautiful small tree, a native of Chili and some parts of Brazil, and is related to our Sumachs. It is now very generally planted in Australia, southern Europe and other warm, dry regions of the world.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—I learn from your journal that in the "Handbuch der Coniferen Benennung," *Wellingtonia* is retained as a genus for *Sequoia*. I once asked Professor Gray if, when he was in England, he called *Sequoia Wellingtonia*? "No," he replied, very earnestly. "It is too bad that a name prompted by narrow national feeling should be allowed to supersede an older botanical name." Is it too late to accomplish anything in this matter by remonstrance?

Cambridge, Mass.

Katherine Parsons.

[European botanists, of course, speak of our Big Tree as *Sequoia*, but the name *Wellingtonia* is now so universally adopted and is clung to with such tenacity, especially in Great Britain, by all nurserymen and other cultivators, that nothing short of a miracle will ever cause it to be discarded in favor of *Sequoia*.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—Your pleasant note concerning the Dog-wood with rose-colored flowers which Mark Catesby had growing in his Virginia garden a century and a half ago, reminds me of a tree in "Bear Camp," which has red flowers. Let me add that I have found in what is known as Big Gum Bottom, a new station for *Rhododendron Vascyi*. Hundreds of thousands of plants are scattered over an area of at least a square mile. They are of all sizes and are loaded with flower buds.

F. E. Boynton.

Macon Co., N. C., April 10th.

Recent Publications.

Versailles et les Trianons, par Paul Bosq. Illustré. Paris, Henri Laurens. (*Bibliothèque d'Histoire et d'Art*.)

French writers have a peculiar gift for picturesque and vivid description, as well as for recounting the facts of history with a touch so light that the record reads like a romance. Versailles and the life which there was led during the most brilliant epoch in the annals of France, offered a congenial theme to a pen of the truly Gallic sort. Monsieur Bosq has proved himself the owner of such a pen, and, moreover, has gracefully interwoven with his own words copious extracts from famous writers of earlier generations. The result is a book small in size and sparkling in tone, which, nevertheless, contains a large amount of information, and gives us a better idea of the former aspect of Versailles and of the scenes which have passed there than we could obtain by much laborious searching in a multitude of more serious-seeming volumes.

The readers of this Journal, it may be supposed, will take an especial interest in the descriptions of the great park of Versailles—the most famous park of modern times—and of the smaller ones which surround the Great and the Little Trianon. These descriptions are, of course, untechnical, but they are clear and interesting, and take us briefly through the history of the great works of which they speak. One fact which will surprise many readers is that the great park in front of the palace of Versailles was not the creation of Le Nôtre, with whose name it is so inseparably connected, but was laid out by Lemercier and planted by Boyceau during the reign of Louis XIII., and merely enlarged and remodeled by Le Nôtre when Louis XIV. made Versailles his principal residence. The first task which this monarch undertook was the remodeling of the park, and from 1664 to 1669 he occupied himself with little else. It is impossible here to repeat the account which M. Bosq gives of the work accomplished in these years; but one or two facts may be cited to give an idea of its magnitude. Nothing was left of the original design of the park except a few of the principal lines. Its borders had been extended until an English visitor could speak of it as a "province in itself." Ninety-five sculptors were employed to people it with statues. It had

fourteen hundred jets of water distributed among many fountains of immense size and lavish sculptured decoration. Trees of the largest growth had been brought in incredible numbers from various parts of Europe. Thousands of Orange trees stood in pots of costliest porcelain. The great Canal was 5.134 feet in length and 380 in breadth, and ended in a piece of water 608 feet square. Groves, trellises, "green parlors," labyrinths, and wide, formally outlined stretches of turf succeeded one another in bewildering variety and on the most colossal scale. And when the great fountains played "the whole world came to gaze." Nor when the park was finished was the work upon it done, for it was continually altered, part by part, until three almost entire reconstructions could be counted during the lifetime of Louis XIV. Under Louis XV. new and equally great changes were made, but during his later years this king abandoned the great palace and park for the Trianon; under Louis XVI. it fell into deplorable neglect, and the Revolution ruined it. Napoleon did much to restore the park, however, and between the years 1860 and 1881 it was replanted, part by part.

The palace called the Great Trianon was built, to please Madame de Montespan, upon the site of a village of that name which was razed to make room for it. Louis XIV. pulled it down and reconstructed it, and in his later years gave much attention to its magnificent gardens and took especial pleasure in nocturnal promenades in gondolas on its canal. Louis XV., taken with a sudden passing fancy for gardening, made it the scene of many agricultural and horticultural experiments; and his gardener, Claude Richard, did real service to the world by first growing in the gardens of the Great Trianon many plants which are now common all over Europe. It was he, says M. Bosq, who first cultivated what the French call "*plantes de la terre de bruyère*" and the English "American plants"—Azaleas, Rhododendrons, Andromedas, and other peat-loving plants. In 1759 Louis XV. added to his horticultural establishment a botanical garden, and placed it under the charge of Bernard de Jussieu, who pleased his master by asking nothing of him, "not even re-imbusement for his outlays."

With the *Petit Trianon* the name of Marie Antoinette is inseparably connected; and it is a name which will be long remembered by historians of the landscape gardener's art, for in her time the first "English garden" in France was laid out in this lovely spot. It is still one of the finest examples of this school of gardening in Europe, and—a fact which M. Bosq does not note—it is of especial interest to American visitors. The elder Michaux, one of the earliest systematic explorers of the Flora of America, traveled under commission from Louis XVI., and the plants he sent home as valuable novelties were cultivated in the "English garden" of the queen. Her gay existence in this garden was soon cut short in blood and fire by the Revolution, but many fine specimens of American trees still bear witness to Michaux's energy and to the fact that the most pleasure-loving monarchs may produce lasting beneficial results while striving merely to gratify their own passing tastes and fancies.

Periodical Literature.

THE February number of *Petermann's Mittheilungen* contains an interesting article by Dr. von Lendenfeld upon "The Influence of Deforesting upon the Rainfall of Australia." The author confesses that his investigations have not been carried on long enough or over a wide enough area to warrant him in claiming scientific value for his conclusions. Yet he seems to think himself justified in believing that opposite effects follow in Europe and in Australia upon the cutting off of forests. In Europe the struggle for life between different kinds of vegetation means a struggle for light; in Australia it means a struggle for moisture. The trees of Australia, having adapted themselves to the exigencies of a dry climate, send forth their roots very widely and deeply, and so wholly absorb all the moisture which exists that no grass will grow beneath them. Nor do they, like European trees, give back by evaporation a large part of what they take—as is conspicuously shown in the case of the Eucalyptus, which perpetually turns the edges of its leaves towards the sun and closes its pores during the hottest part of the day. If, says Dr. von Lendenfeld, the forests of central Europe were all destroyed, the annual rainfall would be diminished by one-quarter and vegetation in general would suffer proportionately. From this opinion many scientific observers will dissent. But whether Dr. von Lendenfeld is right or wrong in holding it, does not affect his assertion with regard to Australia—the assertion that when forests are cut there, the immediate effect is a rapid increase in the minor forms of vegetation. The roots of the trees, re-

maining in the soil, form little canals through which water penetrates the hard ground, and grass springs up and flourishes so that certain tracts in New South Wales can now support ten times as many sheep as before their trees were cut.

No less than 341 species, varieties and hybrids are included in the list of Cypripediums published in a recent issue of *Le Moniteur d'Horticulture*, and now issued as a separate publication. The parentage of hybrids is given and species with annual leaves are distinguished.

Recent Plant Portraits.

Gardener's Chronicle, March 24th.

UTRICULARIA LONGIFOLIA (showing a case of proliferation).

HOLOTHRIX LINDLEANA.

Hooker's *Icones Plantarum*.

SATYRIUM PRINCEPS, *t.* 1729; a handsome species from Port Elizabeth, with showy carmine flowers.

TABEBUIA LONGIPES, *t.* 1738.

ADINOTINUS SINENSIS, *t.* 1740; the representative of a new genus of the Honeysuckle Family, with digitate foliage of a Horse-Chestnut and the flowers of a Guelder Rose. It is from central China and should be hardy and an interesting addition to garden shrubs.

DECUMARIA SINENSIS, *t.* 1741; is also a native of central China and should make a handsome hardy garden creeper, with its obovate leaves and heads of fragrant white flowers. Much interest is attached to the plant as a second representative of a genus known heretofore only in our Southern States.

HAMAMELIS MOLLIS, *t.* 1742; a new Witch-hazel from central China.

CHRYSOSPLENIUM MACROPHYLLUM, *t.* 1744.

ABUTILON SINENSE, *t.* 1750; a native of south-west China; a shrub or low tree, with beautiful yellow flowers.

Botanical Magazine, April.

NYMPHÆA KEWENSIS, *t.* 6988; a very handsome hybrid raised in the Royal Garden in 1885 by impregnating the white flowered *N. Lotus* with the pollen of *N. Devonensis*, itself a hybrid. The flowers are described as nine inches in diameter and as remaining open for several hours after noon.

BRODLEA HOWELLII, *t.* 6989; a pretty white flowered species discovered a few years ago in Washington Territory by the collector whose name it bears.

MASDEVALLIA GIBBEROSA, *t.* 6990; a curious little species from New Grenada; of no horticultural value.

CANTLEYA LUTEA, *t.* 6991.

ABIES NORDMANNIANA, *t.* 6992; "*A. Nordmanniana* belongs to a group of five closely allied European and west Asiatic Silver Firs, the limits of which are not yet well defined. Of these the type is *A. pectinata*, the common Silver Fir, which extends from the centre of France eastward to middle Russia, and reappears in Macedonia and Greece, extending to Anatolia in the extreme east of Asia Minor, and according to Ledebour, also in the Caucasian districts of Imperetia and Ossatia. *A. Apollinis*, with its varieties *Panachaica* and *Regina Amalia*, is confined to the mountains of Greece and Macedonia. *A. Cephalonica* is more restricted still, being found only in the small island whose name it bears. Both of these last are considered as forms of *A. pectinata* by Heldreich, the most competent authority, by far, on Greek botany. *A. Cilicica* is the most Southern species, being confined to the Taurus and Anti-Taurus Mountains in ancient Cilicia, and to the Lebanon; it is the only Levantine species, and differs remarkably from the above, and from the following, in the retrorsely hooked angles of the scales. Lastly, there is *A. Nordmanniana*, to which the geographical limits assigned by Boissier are all the mountains towards the east and south-east shores of the Black Sea, including the south-western spurs of the Caucasus. . . . The nearest ally of all these species is the Afghan and Himalayan *A. Webbiana*, which approaches *A. Nordmanniana* more nearly than any of the more western species.

"*A. Nordmanniana* is a noble forest tree, attaining 150 feet in height, with a trunk six feet in diameter; it inhabits elevations of 2,000 feet and upwards, growing with species of *Corylus*, *Carpinus*, *Cornus*, *Philadelphus* and other European trees."

♂. D. Hooker.

Public Works.

Central Park, New York.—A section of the park along its Fifth Avenue boundary, and between 102d and 110th streets, originally a part of Mount St. Vincent Convent grounds, has remained undeveloped because the city did not get possession

of it at the outset. The whole district was set apart for office and nursery purposes, and the conservatory attached to the convent was allowed to stand until the buildings burned down. For twenty years the ground has been devoted to the experimental growth of plants, and a number of comparatively rare and tender trees and shrubs have been collected here in a somewhat sheltered position. The Park Board has determined to begin the permanent improvement of this area, on the recommendation of Mr. Vaux, the Landscape Architect of the Department, and Superintendent Parsons. The collection of plants that have already succeeded will be extended, and other choice trees and shrubs which will thrive in this protected amphitheatre will be added. It is fortunate for the city, and for all who appreciate thoroughly good landscape work, that Mr. Vaux is again in a position of authority in all matters which touch the design of the park.

Retail Flower Markets.

NEW YORK, *April 27th.*

The trade in flowers is very good, especially with Broadway florists. The supply is short and the average quality poor. Paul Neyron continues to hold the lead among hybrid Roses. Baroness Rothschild follows next, and then comes American Beauty. The finest of these Roses bring 75 cts. each, and the second grade cost 40 and 50 cts. Puritans are in good demand, but are scarce. They are steady at 50 cts. each. La France, Catherine Mermet and The Bride sell for \$2 a dozen. Catherine Mermets are poor in color and very ragged. There are not enough first-rate Jacqueminots to meet the request. They cost \$2.50 and \$3 a dozen. Tulips of first quality, Daffodils and Lilies-of-the-Valley bring \$1 a dozen. Lilacs are \$1 a bunch. The white variety is strong and full. Scarlet Carnations are abundant and well grown. They cost from 35 to 50 cts. a dozen. Grace Wilder and Buttercups are inferior, and may be bought for 25 cts. a dozen. Both *Lilium longiflorum* and Callas bring \$3 a dozen. Violets are small and unsatisfactory at prices unchanged. Smilax is very scarce, and in demand at 50 cts. a yard. *Asparagus tenuissimus* costs 50 and 75 cts. a yard. The filling of window-boxes and jardinières for court-yards makes busy days for gardeners. Pansies, Forget-me-nots, Daisies and Lobelias are favorite flowers for window-boxes. Vines are more used in their arrangement this spring.

PHILADELPHIA, *April 27th.*

Unusually cold weather has kept up a steady demand for all kinds of flowers of first quality, and it has also held flowers in good condition later than in ordinary seasons. Some notable weddings and dinners have helped to hold up prices by the profusion with which the finest flowers were used for decoration. These facts account for the firmness of the market, which has ranged during the week at the prices last quoted. Trailing Arbutus is very plentiful, and sells at 10 cts. to 25 cts. a bunch. This diversity of prices is not due to a difference of quality in the stock, but to the different locations where sales are made. On Tuesday an amateur in Rose culture bought all the fine Roses that were on sale and added them to his own collection for a private exhibition. His own Roses are grown in a house more than 100 feet long, specially constructed, and with every recent appliance for the most successful cultivation of Roses. Another market incident of the week was a single order for more than 1,000 heads of the beautiful pale blue Forget-me-not. This favorite is now at its best, the flowers being cut from plants that have been kept in cold-frames all winter. With warmer weather and brighter sunshine it will become seedy.

BOSTON, *April 27th.*

The supply of Roses has materially decreased during the past week, and there is now a fair demand for all good stock that is offered. One of the most popular of the new Roses, Ulrich Brüner, is seen occasionally, and it sells well. In color it is remarkably bright. Jacqueminots and Hybrids are quite scarce, good blooms of the latter selling for \$6 to \$8 per dozen. The best Jacqueminots bring \$4 per dozen. Carnations are rather small, the usual result of warmer and brighter weather. They cost about 50 cts. a dozen. Violets are scarce at \$1.50 to \$2 a hundred, and Pansies plenty at \$1 a hundred. Among the prettiest flowers seen here at this time of the year are the Primroses. These come in all shades of lemon, chrome yellow, bronze and brown. They are beautifully marked and edged, and some of the lighter colored ones are deliciously fragrant. A small bunch costs 50 cts. There is still an abundance of Lilies-of-the-Valley and Tulips, with a fair stock of Daffodils and Poet's Narcissus. One dollar a dozen is the standard price for these until they bloom out-of-doors. Lilies of all varieties are also abundant at moderate prices. Among the novelties are some white Asters which an out-of-town grower has succeeded in forcing, and a few single Sunflowers. Really good Smilax cannot be obtained at any price. Asparagus, which would make such an admirable substitute for Smilax, seems to win favor but slowly, and the only green used in large quantities is Ferns, the hardy native kinds being used for edges and background of all baskets and designs, and Maiden-hair Ferns for general finish and effect.

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The Use and Abuse of Public Pleasure Grounds.

THE daily papers of this city have recently mentioned the fact that a speculator has applied to the Park Board for permission to erect in the parks "kiosks" to contain machines "that will weigh visitors for one cent and drinking water machines that when a cent is dropped in them will deliver a glass of ice water to the thirsty." It is hardly needful to inquire whether the Board intends to give ear to this enterprising person—we think we can count with assurance upon the fact that it will make short work with his proposal. But the mere fact that such proposals can still be made in any hopeful spirit, that there are still individuals who think they can exploit our public pleasure grounds in the interests of their own pockets, calls for a word of condemnation. Of course all proposals of this sort are made solely in the hope of personal profit. It would be ridiculous to suppose that they were intended to meet any genuine public need. The public, indeed, has a right to ask that it shall be able to drink when thirsty; but if there is any park or portion of a park where this demand is not already met, it should be met by the erection of drinking fountains of proper architectural character, and no fee, however small, should be charged for their use. And although many idlers would doubtless drop their pennies in a weighing machine should they come across it in some corner of a park, the impulse which would prompt thereto is certainly not one which has a right to respectful consideration. Even if there were no other reason to object to the erection of unnecessary structures, however small, in our parks, reason enough would be found in the obligation to impress upon the less thoughtful part of the public for what purposes parks are created and in what spirit they should be enjoyed. They are not places of amusement in the sense that they should contain facilities for exciting curiosity, for spending money, or for idling away an hour in the pursuit of such gratifications as a country fair ground affords. They are places in which to seek fresh air and sunshine, healthful exercise or needed rest, and that re-

freshment of mind and body and that gratification of the sense for beauty which the contemplation of Nature affords. They are, indeed, places for recreation, but in the primitive sense of the word, not in the sense which is most commonly accepted to-day—places for the re-creation of the physical and the spiritual man. It is important that this lesson should be impressed upon the people, and there is no way of impressing it so potent as rigorously to exclude from our parks all features which tend to lead their thoughts and wishes in a wrong direction. When a park is large enough, places should, of course, be set apart for the sports and healthful out-door amusements of children and young people; buildings should be supplied in which food and drink may be had; temporary shelters should be erected in inconspicuous spots; and musical performances may very well be given from time to time—they draw the people into the park, gratify an intellectual craving, and assist the happy influence of Nature herself. But more should not be done in these directions than can be done without injuring the character of a large park as a scene of natural beauty and a place especially devoted to the enjoyment of this beauty; and nothing whatever should be done in the way of gratifying the instincts of those lounging adults who seek in a park the same sort of gratification that they seek in the street or the fair-ground. To erect in the Central Park weighing machines of any kind or drinking fountains which work by a trick, would be to run as distinctly counter to the true purposes for which it was created as to build the road for fast driving, of which there has recently been so much said. The actual injury done would, of course, not be a thousandth part as great, but the spirit in which it was done would be essentially the same. And what is true of the Central Park is just as true of all parks, no matter how small they may be or what may be the character of the population which chiefly frequents them. A weighing machine ought no more to be allowed in Tompkins Square than in the centre of the Mall.

But if the exclusion of these and all other possible devices for filling the pockets of speculators and diverting the attention of the public from the beauties of Nature, is to be recommended for the sake of the growth of the public in intelligence and appreciative power, it is just as strongly to be recommended for the sake of the beauty of our parks intrinsically considered. So many things are absolutely needed in them which disturb their repose and injure their beauty, and it is so hard to obtain these in as inoffensive a form, even, as they might be made to wear, that it is exasperating indeed to think of the possibility of their number being increased by wholly useless, worthless, profitless additions. It is hard to get even a needed drinking fountain, seat or shelter so constructed and so placed that it shall not appear a blot upon the scene. How, then, shall any one dare propose to put the hideous cast iron "kiosks" of the private speculator in a public pleasure ground, where, if allowed at all, they certainly would be put in the most conspicuous places possible—in the places where they would do the greatest possible amount of injury alike to the mood and spirit of the public and to the beauty of the park itself?

Why We Do Not Buy Growing Plants.

WE spoke recently of the difference between American dwellers in cities and those of European lands in the matter of using growing plants for the adornment of the home. As was then said, we cannot help regretting, not that so much is spent here for cut flowers, but that so little is spent for more lasting forms of beauty. There is more than one fact to be noted, however, in explanation of our seeming indifference to growing plants.

We do not mean the fact that such plants are not so freely and attractively offered for sale in our cities as they are abroad; if there were to be a demand for them a supply would no doubt be forthcoming. We mean, in the first place, the difference in certain customs of domestic life

which exist between ourselves and the French and Germans. In France and Germany women of the middle class go daily to the markets themselves, and women of the upper class send their cooks or housemaids; and neither the mistress nor the *bonne* is ashamed to be seen carrying home her big market-basket and her white-papered plant. But with us the master of the house does the marketing on his way to business; or orders are given in writing; or, if the mistress makes marketing a part of her daily shopping-task, she is neither in the dress nor the mood to carry home even the smallest flower-pot. Moreover, while abroad the *commissionnaire* stands waiting on every street-corner to take home for a few cents anything one wants to send, such transportation is much more difficult to get in American cities, and is much more expensive even if it can be obtained. Undoubtedly it is largely for these reasons that, while cut flowers are bought in such quantities on our streets by persons of moderate means, growing plants are seldom purchased by them.

But, it may be said, plants are sold abroad not only in the markets, but from house to house. In London, for example, the wagon of the flower-vender is as familiar a sight as is the wagon of the fruit-seller with us; from him flowering plants may be almost if not quite as cheaply purchased as from the market-man; and the result appears not only inside the London house, but outside. Every balcony in the long, dingy perspective of a London street is ablaze in spring and summer with Roses and Petunias, with Calceolarias and Geraniums; and the visitor thinks with dissatisfaction of the contrast presented by our own streets at the same season, when a few hotels and club-houses show laudable attempts to enliven the prospect with greenery and flowers, but when private houses are almost altogether devoid of such adornment.

Here again, however, the customs of domestic life explain the contrast, at least to some extent. The wealthy Englishman goes to town just when the wealthy American is going to the country; and he wants to make his home attractive just when the American is drawing down his blinds, boarding up his front-door, and doing his best to give the city the aspect of a plague-stricken, abandoned place. And although, naturally, the majority of people pass almost all the weeks of the year in town, whether the wealthy neighbor is at home or away, just as naturally he follows this neighbor's example. It is "the season" for all New Yorkers when it is the season for the rich to be at home; and they care most to make their homes beautiful in winter just as the middle-class Londoner cares most to make his beautiful in summer. No doubt a good deal of enthusiastic amateur gardening goes on for private gratification in the American city back-yard in summer; but to adorn the front of his home from public-spirited motives would seem to an American a futile act when there was no one in town to be gratified by it. This feeling, we allow, is natural. But, like many natural feelings, it is mistaken and unfortunate. The time when "nobody" is in town is just the time when the multitudinous individuals who are in town are in the mood to enjoy every bit of greenness, every hint and suggestion of natural beauty, which may present itself. Such individuals should then be especially bent upon doing their best to gratify each other. And the richer folk who are out of town, living in their own gardens and among great Nature's greater gardens by the seashore or upon the hills—it is surely the time when these should think a little of what they can do for human beings less favored than themselves. Few city homes are left without a care-taker in summer, and few are unvisited from time to time by the master himself. It would cost very little to fill the lower window-sills of such houses with boxes of vines and flowering plants, and it would take very little trouble to keep them fresh and brilliant all summer. And if every absent householder spent this little, how great would be the increase of pleasure for the multitudes of weary spirits to whom a week's outing must represent a summer vacation! The little money spent in this way would

be but a small mite spent on true charity as set against the great sums which the giver annually expends upon his own and his family's pleasure. And if any one doubts whether a really beautiful result can be accomplished with window-boxes filled with simple hardy plants, there are fortunately one or two New York houses to which he may look to convict him of error. Let him look, for instance, this coming summer, at the great house on the south-west corner of Madison Avenue and Thirty-eighth Street—closed and barred like its neighbors, but beautiful, and we may truly say, charitable, with wreathing vines and flowers—and, if it is what it has been in former seasons, he will be willing to make a considerable detour in his walks down-town for the delight of daily passing it.

To the Owners of Woodlands.

THE Pennsylvania Forestry Association is doing good and valuable work in teaching the people of that State to take care of their forests. *Forest Leaves*, the organ of the Association, is full of information about forests, trees and tree-culture, and with more frequent and regular publication would be a model of its kind.

The clear and forcible recommendations which this Association makes in one of its recent circulars are applicable to every owner of a forest or of a piece of woodland; and we are glad of the opportunity to reproduce them for the benefit of our readers. The Association "wants every farmer, every owner of woodland, to know—

"That his wood-lot contains a valuable crop, which it will pay him, not only to cut down and slaughter, but to manage and utilize judiciously;

"That it is possible to utilize the old trees in such a manner that a new, valuable crop is produced instead of the inferior crop, which now so often takes the place of the virgin forest after indiscriminate cutting;

"That as an intelligent manager and husbandman, he would do better to see to a natural reproduction of his wood-lot, to cut with regard to the spontaneous young growth, rather than to clear indiscriminately;

"That the time has come when forest destruction must give way to forest management; for timber is becoming more valuable every year, as it grows scarcer in the country at large;

"That in the woodlands in proper proportion lie, to a large extent, the conditions of a favorable climate and successful agriculture;

"That upon forest growth depend healthfulness and equableness of climate;

"That the forest breaks the force and tempers the fury of the northern, and cools and moistens the breath of the southern wind;

"That by its own cooler and moister atmosphere in summer and warmer atmosphere in winter, it tends to equalize temperature and humidity over the intervening fields;

"That while the open, treeless, heated prairie prevents the fall of rain, allowing moisture-laden clouds to pass over it undrained, we must thank our forest-clad hills and mountains for our more frequent, more gentle, more useful showers; and, above all,

"That the forest cover of the mountains preserves the even water flow in our springs, brooks and rivers, while its destruction, or even deterioration, increases the danger of floods, washes off the fertile soil, and then brings down unfertile soil into fertile valleys, lowers the water level, and, in general, throws out of balance the favorable conditions for agriculture;

"That while we advocate the cutting and using of the wood crop as we need it, we must not any longer, as we have done, squander and waste it; we must not clear where clearing produces danger to the surrounding country."

Leasing State Forest Lands.

THE bill empowering two of the Adirondack Commissioners to lease five-acre tracts of the State forest lands for terms of five years has been amended in the Senate to make the consent of the entire Board necessary for the confirmation of any lease. This is better, or rather it is less objectionable than the original bill; but if it is dangerous for the State to grant these unusual powers to two men, it certainly is neither safe nor wise to grant them to three men. No private individual has any claims upon the lands set apart by special enactment for public use. A refusal to give one the use of five acres for five years, or of a hundred acres for a hundred years, does not conflict with any of his rights as a citizen. A lease of any amount of this State Forest for any length of time to any person for his private use, is clearly a special privilege. If such privilege is granted to one man, another can claim it with equal force. The law will be an advertisement to every one to come and take possession of the spot that suits his particular fancy, until the people of the State will be warned off as trespassers from the most attractive portions of their own land. If the price is made low it will all be "located" in a few months. If a high price is demanded, just complaint will be made that the rich are favored as against their less prosperous neighbors.

The bill is vicious in its essence and its evils are not mitigated by any check or restraint upon what are its most dangerous tendencies. No restrictions against improper exercise of this power are provided, but the commissioners are invested with absolute powers in conveying away the State's right in its own lands. These officials are enabled, under this act, to lease and renew leases of tracts situated anywhere, to whomsoever they may elect, and upon whatever conditions they may prescribe. They are not required even to make the terms of such leases public. In short, they are released from all the restraints that experience has proved necessary for the safe administration of public trusts, so that the dangerous principle of permitting the alienation from the State of its control over its own lands is made still more dangerous in practice, by a neglect to prescribe the limitations and to set up the safeguards which ordinary prudence dictates in all cases where unusual powers are delegated to an agent.

One of the Commissioners has lately declared that he does not favor the principle of leasing, but that he wishes the right to grant leases to the two hundred persons who already have actual possession of portions of the State Forest in the North Woods and elsewhere. That is, he asks for the law to relieve himself of the trouble of deciding the question forced upon him by the presence of these squatters. The Commissioners shrink from the task of ejecting these worthy people, and they ask to be allowed therefore to confirm them in the possession of the land they have occupied because it suited them. But if they shrink from dealing with the hundreds now occupying the State Forest, they surely will be unable to stand before the thousands who will be demanding the same privilege under the new law. It is argued that the scheme can be tried a few years and if it proves unsatisfactory it can then be repealed. But if a Commission feels inadequate to treat with a few men who have possessed themselves of State land without authority, how can it hope to meet with proper spirit an army of lessees who hold the lands on a tenure legally granted by the Commission itself? Clearly such a law would add to the embarrassment of the Commission, not to speak of the increased labor it would entail and the temptations it would offer. It is a bad measure from every point of view and it should never become a law.

How the Bald Cypress Converts Lakes into Forests.

THE natural processes by which the earth we inhabit is torn down or built up are extremely interesting subjects of study. The comparative facilities for natural drainage determine more surely than any other agency

what the future condition of any territory will be. In hilly and mountainous countries the depressions would gain by surface wash what the elevations lose, but for the innumerable water courses that are continually carrying that wash to the sea. Where, however, the surface is nearly level and the water courses have but slight fall, the depressions receive nearly the entire wash occasioned by rainfall and the principal accession from the growth and decay of vegetation.

Of countries that are growing through the last named agencies no better example could be found than is furnished by the Florida peninsula. Its surface, with slight exceptions, is either level or gently undulating. The waters of Florida are clear, containing no earthy matter, and they have so slight a fall that the ocean tides affect them in places a hundred miles inland. A large portion of the rainfall, probably more than half, never reaches the running streams, but escapes by evaporation, or by percolation, to underground channels. In rainy seasons much of the country is overflowed, and in dry seasons the lakes become very shallow and the ponds dry.

A country in which there are such alternating conditions, is eminently suited to the growth of rank and diversified vegetation, both herbaceous and arborescent. In the hummocks and in the low pine woods, which are seldom visited by fire, the growth of vegetation continues almost the year round. Where such growth has progressed unchecked on uplands, the best lands for immediate cultivation are found, while the lowlands are still more valuable, if they can be drained. In the ponds a deposit of muck is being formed, which, when sufficiently elevated, will feed a different class of plants, from those that have contributed to its formation.

When we come to study this leveling process that is going on in the lowland of the South, and in Florida in particular, we are led to the conclusion that no agency has so much to do with it as the peculiar habit of growth of the Bald Cypress (*Taxodium distichum*). This tree is peculiarly adapted to the unstable soil found in ponds and alluvial river bottoms. It has a massive base, few and short branches and scanty foliage. Thus the centre of gravity is near the ground, and this, with the peculiar root growth, renders the uprooting of the tree by wind practically impossible.

The Cypress has a very broad base, which tapers rapidly into the main trunk. This is a characteristic of other trees found in like situations, notably the Tupelo (*Nyssa uniflora*), the Swamp Gum (*Nyssa aquatica*), the Swamp Ash (*Fraxinus platycarpa*), and the Swamp Privet (*Forestiera acuminata*). The Cypress is provided with additional means of maintaining its equilibrium. Where the situation favors a large growth (the Cypress sometimes measures ten feet in diameter as many feet from the ground), thin buttresses spread out from the base in all directions. This feature lends to a great Cypress swamp an almost labyrinthine appearance, especially in dry seasons, when the bases of the trees are left bare. The Cypress has also a system of strong surface roots, by the interlocking of which neighboring trees give each other support.

The surface roots of the Cypress have the peculiar habit of giving out excrescences, which rise several feet from the surface, in the form of domes, turrets and arches, or in wrapping other objects with a vine-like growth. These excrescences—commonly called knees—are hollow and of spongy texture, and their growth hastens the time when the localities they now occupy will become too elevated to suit such forms of vegetation.

In the shallow lakes and ponds that abound in the low Pine woods of the South the Cypress does most effectual work as a land builder. Germinating on a miry margin or shoal spot, in a season of low water, the young tree becomes established, sends out its raft of roots to support its spindling top, and as it grows pushes upward knees, which serve to detain floating substances and to give support to such objects as are in condition for growth. In a dry

season—which may last for a year or more—a rank growth of sub-aquatic plants springs up. This dies down in the fall and the leaves and dead twigs of the Cypress are added to the matted herbage, which each spring offers better support for a succeeding growth.

This process of vegetation progressing around a shallow lake finally converts it into a winter or dry-weather pond. During heavy falls of rain soil is washed in from the surrounding slopes. As fast as spots become unfitted for water-loving plants other species take their place. If surrounded by Pine woods seeds of lowland Pines begin to spring up nearer and nearer the centre of the pond, and the long leaved Pines make a heavy deposit on the surface each year. If near a hummock, the Bays, Magnolias, Oaks, etc., may take possession. Thus by continual wearing down and building up, through such natural agencies, there is a constant approach to uniformity of surface. A marked change must take place during a century; a still greater change during a thousand years. This process is continually going on, and the Bald Cypress has played an important part in fitting the low country of the South for man's use.

A. H. Curtiss.

April in the Pine Barrrens.

THE low Pine-barrrens of southern New Jersey are always interesting, and even at this early season there is an awakened activity in plant life that can hardly be appreciated by those dwelling a few miles to the north. By way of compensation for its lack of bold, picturesque scenery, Nature has clothed these wild levels with a charm distinctively their own, and a journey of two or three miles from home will bring me to chosen spots where such a wealth of floral treasures awaits me as can scarcely be found in any other locality of the United States.

Among our earliest treasures is the little trailing evergreen, *Pyxidantha barbata*, which often begins to open its white and rose colored flowers as early as March, while the Trailing Arbutus blooms here a month earlier than in New England. These two lovely plants frequently run together, so that it is difficult to separate them.

The Partridge-berry and the aromatic Wintergreen, with their bright red berries and evergreen leaves, also help to cover the ground and make charming masses that we covet for our gardens. But I have never succeeded in making them feel at home and happy under cultivation—which, after all, should be a matter of small regret, for they never would appear as well with civilized surroundings as they do in these lowly and lonely places.

The small shrub *Cassandra calyculata* we find in bloom near the Pyxie and the Arbutus. And a few steps beyond in the Cedar swamp, the stately *Helonias bullata* is throwing up its spikes of purplish flowers by the side of the Golden Club, while the Wind-flower is clustered thickly around an old decaying stump. What a rare gardener has been at work here! The stump itself is decorated all over with scarlet-cupped Lichens, while its decayed heart nourishes a thrifty clump of Blueberry, with pink buds just ready to burst into leaf, while beneath my feet is the lance-leaved White Violet with a delicate perfume not bestowed on our other species.

The aroma of these low woodlands in spring is delicious. The fragrance of the swaying Pines overhead, intermingled with the spicy breath of the Wax Myrtle and Sweet Fern, already waving its plummy catkins, together with odors of Sassafras and the more subtle fragrance of other shrubs, all combine to make a perfume that can only be produced in Nature's laboratory.

The deciduous trees are still leafless, and comparatively few of our plants are in bloom, yet there is an atmosphere of delicate color all about—on every twig and swelling bud, and on the lowly growth that carpets the earth. The Barrrens will be almost vivid with bright flowers by and by, but the place will hardly be more attractive than at this spring opening with its freshness, its modest beauty and its promise.

Vineland, April 20th.

Mary Treat.

The Meadows in Central Park.

SCENERY of a purely pastoral character is no doubt the most valuable element of a park within the limits of a great city like New York, for no stronger contrast to the constrained and artificial conditions of urban life can be imagined than meadow-like stretches of greensward which are not fenced in by rigid boundaries, but fade away in obscure and shadowy distance. Broad, open landscapes, with spacious skies, and the sense of enlargement and freedom which they bring, offer the most pleasing of contrasts to the hard confinement of city streets with their skyline of roofs and chimneys; the tranquillizing influence of soft, smooth, grassy surfaces is an unfailing refreshment from the wear and weariness, the strain and pressure of city life, with its strenuous effort and consuming ambition. The designers of Central Park plainly endeavored to embody, as much as possible within their limitations, and in a dignified way, without resorting to affectations or deceptions, the quiet, pastoral idea. Within the narrow area of the park the broadest scope of open meadow that could be secured was considerably less than thirty acres. But the bordering woods were so disposed as to leave the boundaries uncertain and mysterious, and the turf was made to flow into sunny alcoves and about promontories of foliage, until it was lost in hazy shadows which suggested indefinite extent of the same restful scenery. The view on page 125 is taken from a point overlooking the west meadow. The glimpse of distant turf seen under the branches of the group of trees in the centre, the opening in the wood border on the left, the skyline of trees in the distance, all suggest to the imagination a limitless extent of similar rural conditions. No object meets the eye of the observer to indicate that there is anything beyond but green pastures and tree-flecked meadows. It may be added incidentally that the illustration shows an example of exceptionally good grouping and thinning after the manner recommended by Mr. Olmsted in another column of this paper.

Foreign Correspondence.

London Letter.

LAST Tuesday the Royal Horticultural Society held its first meeting in its new quarters, and the occasion was interesting beyond expectation. The exhibition building is a stately structure, and the hall, which is of ample size, was crowded with a wonderful display. Apart from the Dutch bulbs, which by this time have become rather monotonous, noteworthy exhibits were the groups of Cyclamens, each plant carrying from sixty to eighty flowers; masses of the neat little Polyantha Roses, mentioned in a former letter; some remarkable new Tea Roses of Mr. Bennett's raising, particularly the variety called Princess of Wales, white suffused with yellow, and Lady Mary Fitzwilliam, a delicate pink. Of the numerous Orchids a plant of the famous white *Cælogyne cristata* was conspicuous for size and beauty. It measured two feet across and bore numerous long clusters of spotless flowers. This is still one of the rare and choice Orchids, and no doubt this individual plant would bring at auction from 100 to 150 guineas any day.

Among the new plants, certificates were awarded to the following:

Spathoglottis Kimballiana, named in compliment to one of your Orchid amateurs, was unquestionably the most important plant exhibited, being so very beautiful and so very distinct from all known Orchids. Its flowers may be compared with those of *Phalænopsis grandiflora* in size and form, but are of a pure canary yellow; in fact, some thought it was a yellow *Phalænopsis*. The flower is three inches in diameter, with broad sepals and petals, and its lip is adorned with a heavy blotch of rich reddish brown. The bulb is egg-shaped, and from this

proceeds the plaited or furrowed leaves about two feet long. The flower stems are from two feet to three feet high, surmounted by dense clusters of flowers, which expand in succession, two or three being open at one time. It was imported by Sander & Co., St. Albans, last year, and the description given at the sale of its rare beauty is more than confirmed by this plant, which is the first that has been seen.

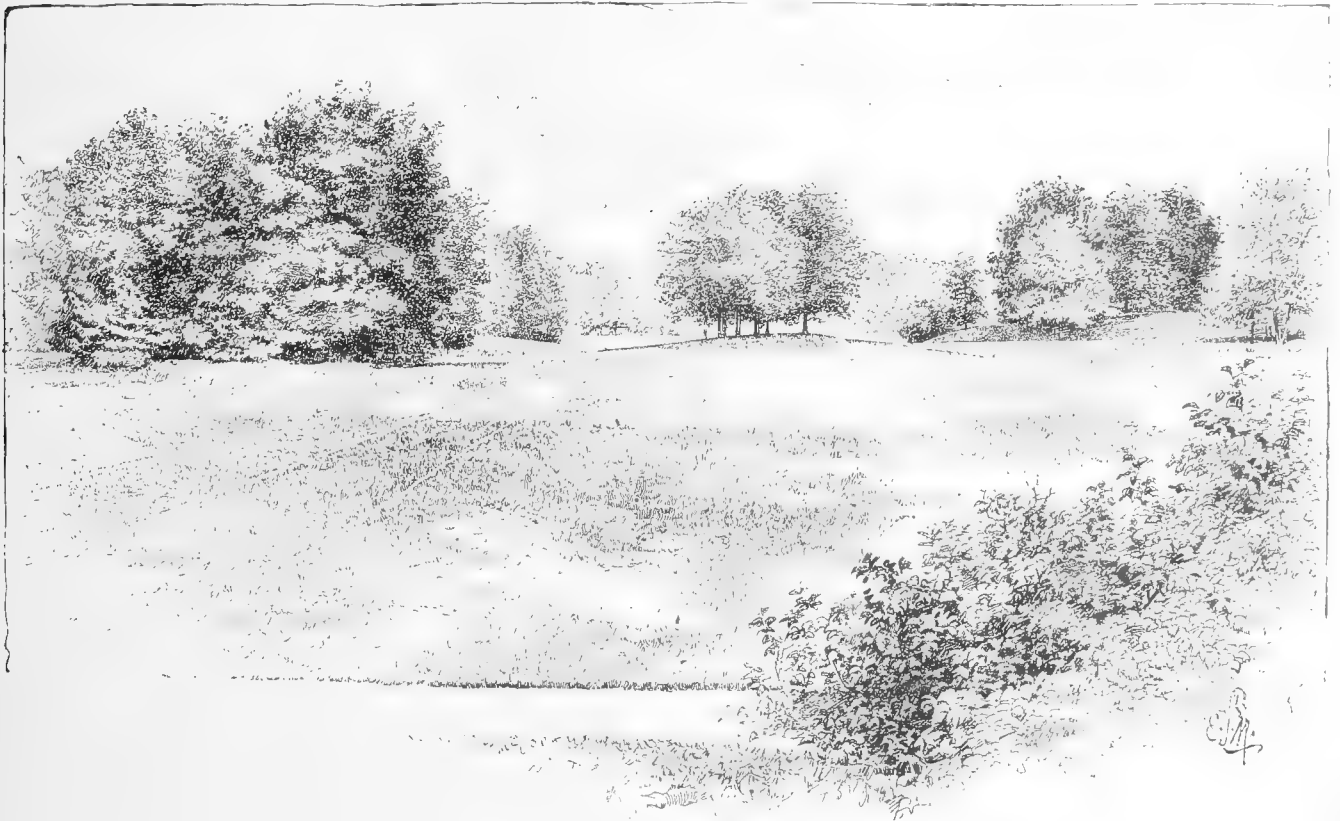
Phalænopsis John Seden, a new hybrid between *P. grandiflora* and *P. Luddemanniana*, was shown for the first time by its raisers, Messrs. Veitch & Sons. This, too, is a beauty, its flowers being different from those of any other *Phalænopsis*. They are as large as those of *P. grandiflora*; the petals and sepals being pure white, copiously spotted and freckled with rosy purple, with violet and yellow on the lip. The vigorous growth of Luddemann's species is transmitted to the progeny, which is

nette was the best pink variety of this class, but the present novelty eclipses it far and away in color, being several shades darker and brighter, and the flowers are produced in larger clusters. The Polyantha Roses have been neglected, but they will fast rise in favor now that varieties are produced with rich delicate colors.

The White Lilac, Marie Lemoine, is one of the best varieties of *Syringa vulgaris* I know. The flowers shown were, of course, forced, the clusters were very large and dense, and the flowers of unusual size and snow white. It was certificated chiefly on account of its great value for forcing into early bloom, but, no doubt, it would be equally fine in the open shrubbery. The best White Lilacs we have besides this are *grandiflora alba* and *Marie Legraye*, but I think *Marie Lemoine* is finer than these even.

William Goldring.

London, March 31st.



The Meadows in Central Park.

fortunate. It is as pretty as the other new hybrid, *F. L. Ames*, and certainly is more remarkable, and if it possesses the free flowering character of *Luddemanniana*, it will make a valuable plant.

Dendrobium crassinode superbum won the unanimous approbation of the committee on account of the large size and glowing color of the flowers which thickly wreathed every stem. At first sight one would think it identical with Barber's variety, but the flowers are decidedly larger, and the bright rose-purple color, instead of being confined to the tips of the sepals and petals, runs half way down, and is in beautiful contrast with the whiteness of the other parts and the golden-blotched labellum. This makes the third variety of *D. crassinode* that has been named, the others being *Barberianum* and *album*, the latter having white petals.

Gloire de Polyantha Rose.—The charming little Polyantha Roses are now becoming better known and more popular, and this new sort, raised by Guillot of Lyons, and shown by Paul of Cheshunt, is, perhaps, the best yet produced. Until this sort came out one called *Migno-*

New or Little Known Plants.

Brodiaea Bridgesii.*

THIS is a characteristic representative of a large group of umbelliferous liliaceous plants peculiar to western North and South America, and especially abundant in California. They differ from *Allium*, a genus which is found in all northern temperate regions, and is also very abundant in the western United States, in the absence of alliaceous odor, in springing from a solid corm instead of a coated bulb, in the less spathaceous character of the bracts which subtend the umbel, and in the character of the ovary. The flowers vary greatly in color and form, being often quite handsome, and are usually jointed upon the pedicels. The most prominent genus of this group is *Brodiaea*, which includes some 20 or 25 Californian species and a number of very little known South American ones.

* B. BRIDGESII, Watson, Proc. Am. Acad. xiv. 237. Scape a foot high or more, from a small bulb; pedicels 10 to 20, elongated; perianth blue, 12 to 15 lines long, funneliform, the narrow tube exceeding the lobes; stamens 6, in one row on the throat, the short and nearly equal filaments dilated downward; anthers linear; capsule ovate, much shorter than the style.

These are variously divided into 3 or 4 sections, to which twice as many generic names have been given by different authorities, based mainly upon the form of the flower and upon differences in the stamens, three of which are sometimes reduced to broad scales, while the filaments are often winged.

The present species belongs to the section *Trititeia* or *Seubertia*, characterized by having six stamens with naked filaments and anthers suspended by the middle, and the tube of the flower narrowed downward. It is one of the most showy species of the genus, the numerous large flowers being of a bright sky-blue color. Its home is in central California among the foothills of the Sierra Nevada. Most Californian bulbs of this sort need peculiar treatment, and are apt to give poor satisfaction in eastern gardens. Some of our florists who have had experience in their culture should tell us what methods have been found to give the best results.

S. H.

Cultural Department.

Calceolarias.

FROM March till May the spotted or herbaceous Calceolarias are at their best in the green-house, and they make a magnificent display. Indeed, when massed together no flowers of the season equal them in brilliancy and profusion. By continued selection in recent years larger, more perfectly formed, more brilliantly colored and distinctly spotted flowers have been produced, and the habit of the plants has become so dense and stocky that flower stems now stand erect, unsupported by any stakes.

This year we have the International strain only, and among a hundred plants now in full bloom, in one of our green-houses, there is not so much as one stick or other support of any kind among them, but they all stand bolt upright by the sturdy vigor of their own limbs.

The main points to observe in growing Calceolarias are these: Do not sow the seed before the middle of June; throughout their early life keep them as cool as possible; shade from sunshine during their whole existence, but at the same time give them as much light as possible; don't allow them to get frozen; never let them get dry at the root; don't crowd them; keep them rigidly free from aphides, and when they are in bloom do not allow water in any way, even as "dew" from an over-moist atmosphere, to touch the flowers.

Sow the seed about the 21st of June, in a seed-pan filled two-thirds deep with drainage and then to the top with fine sandy soil. Put the seed-pan in a north-facing cold-frame, with sashes on to ward off rain, and ventilate to keep it cool, and shaded to prevent the earth in the pans getting dry too quickly. The seed, although very small, has great vitality, and generally most of it germinates in a fortnight. We soon prick off the seedlings into other pans, thence into two-and-one-half-inch pots, and afterwards repot them as their size and vigor demand, till they are in six or seven-inch pots, the sizes in which they bloom.

For soil use rich, porous, turfy loam rubbed (not sifted) fine, and some dry, old manure, also some leaf soil and sharp sand, and in all cases have the pots well drained. And although the soil should be moderately firm, particularly avoid such solid potting as would be necessary for Roses or Carnations.

Throughout their whole existence Calceolarias must be copiously supplied with water at the root; and after they are in their flowering pots and well-rooted, weak manure water may be given them frequently. But as their foliage is so succulent and closely bunched together, carefully avoid wetting the leaves, else they are apt to rot off at the neck.

We keep the plants outside in the cold-frame till November, when they are brought indoors to a cool green-house and set on stages quite near the glass. While a slight frost will not hurt them, it is better not to run the risk of any freezing whatever. Throughout the winter we keep the green-house as cool as is possible with safety, never letting it fall under 35° nor



Fig. 24.—*Brodiaea Bridgesii*.

rise above 50°. In favorable weather we ventilate freely and at the same time use a little fire heat to dispel damp.

If sown early and grown along vigorously Calceolarias may be had in bloom in January, and if sown in September their flowering period can be retarded till June, but after the warm weather of summer sets in it is a difficult matter to keep them in good condition. They are at their best in April.

They are more liable to be attacked by the green fly than are any other plants in cultivation, and in order to protect them from aphides we must use tobacco vapor and smoke unsparingly, and not so much as a cure as a preventive. While the young plants are in the cold-frames, tobacco stems should be placed under and among the pots; and in the green-house tobacco stems should always be laid on the hot-water pipes under the benches. The constant vapor from these wetted stems, and thorough smoking at intervals, are the best defense against insect attacks.

Calceolaria flowers do not last long after being cut, but for a

day or two they are very good; and as they are very easily injured by crushing they must be packed and carried carefully. But the plants in bloom can be used with admirable effect in room decorations.

Glen Cove.

William Falconer.

The Rock-Garden in Spring.

Iris Korolkowi, a comparatively recent introduction from Turkestan, is one of the earliest plants in flower in a New England rock-garden. It is a dwarf, bulbous and very hardy species a span high with narrow leaves and rich purple flowers, brightly marked on the falls with large, clear yellow blotches. With it, and a little earlier, bloom *Iris reticulata* and its variety *Krelargii*, charming little Caucasian plants, also with purple yellow blotched flowers. These appear with the Crocuses and Siberian Squills in the middle of April, and nearly a fortnight later than the earliest Snowdrops. Single Hepaticas have passed when these Irises are in bloom, but some of the double flowered varieties are later and last a long time in flower. Some of these have very dark blue, and others pink or clear white flowers. Few of the earlier flowering rock-plants are more beautiful. The Spring Snowflake (*Leucoium vernum*) is one of the great attractions in the rock-garden at this time. It is a dwarf species from central Europe, hardly more than six inches high, with large, drooping, bell-shaped, fragrant flowers, an inch and a half across, when expanded, and marked with a conspicuous spot of green and yellow at the tip of each segment. This is one of the most charming of all the plants of its class. Not less attractive and equally hardy is *Chionodoxa Lucilia*—one of the handsomest and most interesting of recent additions to the perfectly hardy spring flowering bulbs. *Chionodoxa* is formed from two Greek words meaning snow and glory, and refers to the fact that this plant flowers amid the melting snows of its mountain home. It is a native of Asia Minor and Crete, and was discovered by the Swiss botanist Boissier on the western Tmolus, above Bozath, at an elevation of 7,000 over the sea level. The leaves are three to six inches long at the flowering period, strap shaped and surmounted by a slender raceme of three to six or sometimes even twenty intensely blue flowers shading to white in the centre. These are fully an inch across when expanded. *Chionodoxa Lucilia* can be as easily grown and as readily increased as a Siberian Squill or any other spring flowering bulb. A few days later *Adonis vernalis*, one of the best and hardiest of dwarf plants, opens its splendid yellow flowers, and these in turn are followed by many others, which make the rockery the most interesting spot in a garden in April and early May. These plants are all perfectly hardy, they flourish and increase and improve year after year among the rocks or in any garden border, and year after year the unfolding of their flowers is a new surprise and a new delight which old acquaintance never dulls. C.

Fruits for Market and for Home Use.

A CORRESPONDENT, after alluding to some notes of mine on fruits for home use, inquires if such fruits are not good enough for the market? This is a novel way of putting the question, and the reply might be that they are often too good. We raise home fruits to eat and market fruits to sell. Very plainly the latter must reach the market in salable condition, and they must help by their appearance to sell themselves. For home use, flavor is the highest consideration. For market, it is less important than appearance, and to have a good appearance in the market a fruit must be firm enough to endure carrying. Again, a market fruit must be productive if the grower is to make a living. From this it may be seen that while a man who makes a business of fruit-growing sends to the market every day what he would never think of putting on his own table, it does not follow that he is dishonest or wicked. He is simply driven to this by the necessities of his calling and the demands of his customers.

The Cumberland Strawberry has size, beauty, earliness and quality, all valuable features in a market berry, but no one would think of growing it for that purpose, simply because it is too tender to stand transportation. The Manchester, Downing, May King, Jewell and many others are only fitted for near markets, for the reason that they ripen soon after coloring. The Sharpless, Atlantic and Davis are good market varieties, not only on account of their size, beauty, etc., but for their firmness and ability to stand long-distance carriage. Other varieties, like the Wilson, Crescent and Jersey Queen, color in advance of maturity, and are ripe in appearance while they

are yet solid. They bear transportation for long distances, and ripen on the way to market. It is this quality that has given the Wilson such a reputation, but no one would think of growing it for family use, except those who consider one Strawberry as good as another when smothered in sugar.

The Caroline, Orange, Clarke and such tender-fleshed Raspberries are utterly unfit for market on account of their delicacy. Such fruits will only bear transportation from the garden to the table. It is only the firmer sorts of red Raspberries that will answer at all as market varieties, and a wet spell at the ripening season plays havoc with the best of these. Firmness is the redeeming quality of the Black Caps. This fits them for long carriage, and being good keepers, they are admirable for market purposes.

To illustrate the value of appearance one only need place a Dana's Hovey or Seckel Pear on sale beside a Clairgeau or Kieffer. Ninety-nine buyers would select the big, handsome fruit before the knowing hundredth man would taste the luscious little ones. And so the whole list might be canvassed. In Grapes, for example, the early and good-looking Champion always brings good prices, but it is only fit to sell.

On the other hand, it must be admitted that market-growers do wrong in sending certain varieties of Grapes as soon as they color, but long before they are really ripe. The Ives is one of the kinds that wears a color of ripeness long before it is fit to eat. The objection to the Grape is not that it is of poor quality. It is really a good Grape when ripe, but growers take advantage of its appearance to palm off an unripe, and therefore unwholesome, fruit upon the unsuspecting buyer. Here is a plain case for interference by City Boards of Health. If growers will send them, and dealers will sell them, the law should step in to protect the people from danger. Tons of these Grapes are sold in this city every year. They not only threaten the health of consumers, but they injure the business of every honest grower. E. Williams.

Globe Artichokes.—Although these are common vegetables in most good gardens in Europe, they are not in general cultivation here. There is a growing demand for them, however, not only for fashion's sake, but many people are very fond of them. Our first Artichokes are cut about the 20th or 25th of June; they are abundant through July and August, and in moderate supply till the middle of October. As a change or extra dish, they are desirable at all times, but more especially after mildew destroys Peas—about the middle of July—and until Lima Beans come in about the first of August. Our plantation is in rows some 6 feet by 4 feet apart. The plants are not quite hardy, and in November they are cut over close to the ground and the tops removed. After the first sharp frost a large armful of dry forest leaves is placed over each plant, a little thatch is scattered over the leaves to keep them in place. Early in April this covering is removed, and between the 20th and 30th of April all the living plants begin to grow. Plants required for the June and July crop should not be interfered with; but if a few old plants are lifted, and each cut into two or more parts with a sharp spade, and these divisions are planted separately, they will yield fine heads in August and September. It is also well to break up and replant the Artichokes every second year, as it keeps them in vigorous condition. We also raise a few plants from seed every year. Sown in the green-house in February or March, and grown on vigorously in hot-beds till the middle of May, and then planted out, they yield fine heads in September and October. But if sown late, or the summer is unusually cold, they will not bloom at all the first year. The seeds retain their vitality for many years. In spring, after the plantation is made up, manure and fork the ground between the plants, and, if need be, intercrop with early Spinach or Lettuces. Towards the end of June the plants will have grown so much that they will meet each other and destroy any crop that may then be between them. Summer care consists in keeping them clean and cutting off every head just as soon as it is large enough to use. This has a tendency to prolong the crop. Sometimes the young shoots of Artichokes are bleached, being treated like Cardoons, and used as a substitute for these, but this dish meets with little favor. Large Green is the variety advertised by most seedsmen. But we get a good many varieties from seed, some good and some poor, so that the best must be selected and perpetuated by division. Those that have the thickest and fleshiest scales are the most desirable.

Rhododendron Countess of Haddington.—A good specimen of this fine plant was recently exhibited at the Massachusetts Horticultural Society by Mrs. F. B. Hayes, of Lexington. It is one of the first of the long series of hybrid Rhododendrons which

have been raised by crossing Asiatic species. Its parents were *R. ciliatum* and *R. Dalhousie*. The latter is a straggling shrub six or eight feet high, growing upon trunks of trees, with immense white tubular flowers, in open terminal umbellate heads, which, with the straggling habit, this hybrid inherits. The flowers, of which there are rarely more than two or three in each umbel, are two and a half to three and a half inches long, white, tinged with pink, and in shape not unlike those of *Lilium longiflorum*. This Rhododendron, which to persons who only know our native species hardly seems to be a Rhododendron at all, is an excellent cool green-house plant, which can be had in bloom at any time from March to May. It requires the same treatment as the Indian Azaleas, and its blooming period may be retarded in the same manner. The not very good habit and its slow growth are the only drawbacks to this plant, which should be more often seen than it is in American collections. S.

nearly a quarter of an acre of ground with its numerous distinct trunks and wide spreading top, and is an object of much interest to all visitors to this remote corner of the Florida peninsula.

The Florida Wild Fig, like many other species of this genus, is parasitic. Its seed germinates upon the trunks or branches of other trees, where they are dropped by birds. The roots of the Fig, as it grows, gradually extend down and around the trunk of its host, which sooner or later inevitably perishes in their vigorous embrace, and in time reach the earth, grow together, and form the first and principal trunk of the tree. Aërial roots are constantly developed from the branches, and after becoming fixed in the soil, grow into trunks, which often exceed the original stem in size; and this tree, like many of its kindred, the Banyans



The Wild Fig Tree of Florida.

Plant Notes.

The Wild Fig Tree of Florida.

OUR illustration on this page represents, it is safe to say, one of the most remarkable individual trees which can be found within the limits of the United States. It is a specimen of the wild Florida Fig (*Ficus aurea*), which grows in what is locally known as the "hunting ground," a rich, wooded hummock on the shores of Bay Biscayne, about ten miles west of the mouth of the Miami River, in the extreme southern part of Florida. This tree covers

of the East, thus gradually extends itself over a large area.

Two species of Fig are found growing spontaneously in the semi-tropical portions of Florida. Of these, *Ficus aurea* is the most common and by far the handsomest. It grows on many of the keys from Key West to Cape Florida, and extends up the east coast to the Indian River region, but it has not been detected on any part of the west coast. There are specimens of this species in the Kew Herbarium, from the island of New Providence (Brace 356), and it is probably to be found on the other Bahama Islands.

The Florida Fig is a large evergreen, or sub-evergreen tree, with a trunk sometimes three to four feet in diameter, with

light gray, very smooth bark, and coriaceous yellow-green leaves, three to four inches long and two inches broad. They are pointed at both ends, and are borne on stout petioles, which, as well as the prominent mid-ribs, are somewhat lighter colored than the rest of the leaf. The fruit is small and nearly round, about one-third of an inch in diameter, and sessile in the axils of the leaves. It is yellow as it approaches maturity, a character which probably led Nuttall to apply the name *aurea* to this species, but when perfectly ripe turns bright red.

The noble tree which stands in front of the United States barracks at Key West, and which all visitors to the island are taken to see, belongs to this species.

Ficus aurea was quite generally introduced into cultivation a few years ago, through the agency of the Arnold Arboretum. It is easily raised from seed, and at the north makes a hardy conservatory or house plant, although inferior for this purpose to the common Rubber-plant (*Ficus elastica*).

Our picture is from a photograph made by Mr. James M. Codman, to whom the readers of this journal are indebted for many of its most interesting illustrations. C. S. S.

Notes from the Arnold Arboretum.

THE earliest shrub in flower in the collection, with the exception of a few Willows and Alders, is *Erica carnea*. It was in full bloom by the 14th of April; and the season here this year is ten or twelve days later than the average. This is a dwarf species which inhabits the lower hills of the European mountain ranges from Switzerland to the Balkans. It rarely exceeds six inches in height, although in some localities it grows erect and much taller (*E. Mediterranea*). The flowers are bright, clear red, a quarter of an inch long, drooping, axillary and arranged in leafy racemes, terminal or just below the ends of the branches. This is one of the hardiest and most satisfactory of all the Heaths in this climate; and is indispensable in a rockery. It flourishes in a compost of peat mixed with a liberal amount of sand; and blooms not only earlier in the spring than other species, but again very late in the autumn. In a milder climate it continues in flower nearly all winter. A slight protection of pine branches thrown over it in winter protects it here from the scorching sun of February and March. A variety with white flowers is generally known in gardens as *E. herbacea*.

A few days later *Daphne Mezereum* was in bloom. This is a widely distributed shrub, common over nearly the whole of Europe and Russian Asia and extending to the Arctic regions. For centuries it has been a favorite garden plant in Europe, but is now too rarely seen in this country. It is an erect glabrous shrub, one to three feet high, with rigid, erect branches, each terminated with a tuft of narrow deciduous leaves. The flowers appear before the leaves, in numerous crowded clusters of two or three, along the shoots of the preceding year, and are succeeded by large red, handsome berries. This is a very hardy and perfectly satisfactory little shrub, which thrives in any good garden-soil. There is a variety with white flowers, and another which blooms in the autumn. The bark of the *Mezereum* has medical properties, and is collected in large quantities in some parts of Germany. It is now principally employed as an ingredient in the compound decoction of Sarsaparilla.

Cornus officinalis is in full bloom at the end of the third week of April. This is a Japanese species which, according to Siebold, reaches a height of 10 to 12 feet, and is greatly valued by the Japanese as an ornamental plant and for the medicinal qualities of its bark. An admirable colored plate (*t. 50*) of this plant is published in Siebold & Zuccarini's "*Flora Japonica*." It very closely resembles the well known Cornean Cherry (*Cornus mascula*), as Siebold himself points out, and it is probably merely an extreme geographical form of that species. It has the same small yellow precocious flowers produced in simple umbels from the axils of the leaves on the shoots of the previous year, and the same cuspidate-acuminate entire leaves, which, however, in the Japanese plant have tufts of thick rusty hairs in the axils of the primary veins. The fruit, as described by Siebold, seems identical with that of the Cornean Cherry. *Cornus officinalis* is a very hardy, fast growing shrub, chiefly valuable for its very early showy inflorescence.

Cornus mascula is also in bloom, its leafless branches wreathed in yellow. But this is such a well known plant that nothing need be said about it except that it is not appreciated

or planted half often enough in this country, and that the varieties with variegated leaves—great favorites with many nurserymen—do not bear our hot sun well and are not worth planting here. Forms now exist in French collections which vary from the type very considerably in the shape and color of the fruit. The most striking and interesting of these is one with clear, bright yellow drupes.

Andromeda Japonica, an evergreen species, the Japanese representative of our Alleghany *A. floribunda*, is in flower, or rather it would have been in flower several weeks ago had not the cold, as it does every year, destroyed nearly all its beautiful racemes of pure white bell-shaped flowers. This Japanese *Andromeda* is a perfectly hardy plant, hardier here even than its American congener, but it blooms too early and is not worth cultivating at the north as a flowering plant. At the south it might be expected to open its flowers in February and to become a most useful and attractive garden ornament. *Corema Conradi*, which is now well established in the Arboretum, is also in flower. This is one of the rarest of North American shrubs, being found only in a few isolated stations on the coast of New Jersey, Long Island, New England, and in Newfoundland. It is a diffusely branched, spreading little shrub only a few inches high with scattered or nearly whorled heath-like leaves and minute apetalous flowers in small terminal heads. Its interest is botanical rather than horticultural, although the male plant is handsome when in flower with its tufted purple filaments and brown anthers. This plant is rather impatient of cultivation, but it can be grown in sandy peat in full exposure to the sun and once established it spreads rapidly. Plants, however, when they are taken up on the seashore must be thoroughly rooted in pots in a frame or cool green-house before being planted in the border. It is hopeless to try to transplant it in any other way.

The Leatherwood (*Dirca palustris*) of our far northern woods, will interest the botanist rather than the gardener accustomed only to plants with showy and conspicuous flowers. It is one of the earliest shrubs to bloom and one of the easiest to cultivate. Its small yellow flowers in dense heads appear some time before the leaves. ♀.

The Forest.

The Forests of the Yellowstone National Park.

STANDING upon one of the high peaks in the north-western part of the Yellowstone National Park, the observer looks out upon an almost unbroken, undulating, dark green forest, stretching away to the eastward and southward. This timbered area, comprising the central and southern portions of the Park, is a high, rolling, volcanic plateau, with an average altitude of about 8,000 feet, except in the extreme south, where an altitude of 10,000 feet is reached. On the north-west it is flanked by the Gallatin Range, mainly sedimentary, and along the whole eastern border by the rugged volcanic peaks of the Absaraka or Yellowstone Range, both reaching altitudes of 11,000 feet. The continental divide crosses the Park and is generally broad, ill defined and heavily timbered throughout, with an altitude varying from 8,000 to 10,000 feet.

The mountain slopes over the region, where not too precipitous and rocky, are generally well clothed with timber up to 9,000 feet. Above this the country becomes more open, grassy parks mingled with groves of trees, until the timber line is reached, which may be roughly estimated at 9,600 feet on the peaks and somewhat higher on the elevated plateaus. The altitude of the Park, with its topographic features, make it one of the storm centres of the northern Rocky Mountains. It is one of our greatest natural reservoirs, including within its limits the head waters of the Yellowstone, Gallatin, Madison and Snake Rivers. The Park lies in the Rocky Mountain belt of coniferous forests, geographically termed the Interior Pacific, and which, trending north-westward, unites in Washington Territory with that of the Pacific coast, forming a broad belt which still farther north in British America merges into the north-west extension of the Atlantic forest.

The common and most widespread tree of the Park is the Black Pine (*Pinus Murrayana*). It is the only tree forming extensive forests, to the exclusion of other species. It reaches its greatest development on the drier plateaus,

between 7,000 and 8,000 feet, here forming at least ninety per cent. of the forest. It is not generally over two feet in diameter, with a height of 60 to 100 feet, and is found from the lowest altitudes up to 9,500 feet; over the lower and drier areas with the Douglas Fir (*Pseudotsuga Douglasii*), and in higher and more moist situations—with more or less Spruce and Fir. The young forests of Black Pine are composed of slender, extremely straight trees, growing so close together as to be almost impenetrable, and are known as Lodge Pole Pines, having been so used by the Indians. Probably sixty-five per cent. of the forest area is composed of the Black Pine.

The Rocky Mountain White Pine (*Pinus flexilis*) is a common tree over the dry gravelly ridges, from 7,500 feet upward, especially above 8,000 feet, although occurring frequently at much lower elevations.

Pinus albicaulis, another White Pine, is found associated with *P. flexilis*, but ranges higher, being found scattered or in bunches on rocky exposed ridges and summits at the upper limit of tree growth, but has been observed as low as 7,500 feet. The region of the Park is probably the most eastern and southern habitat of this species. It is abundant on the higher mountains of Park, Gallatin and Madison Counties, Montana, immediately north and north-west of the Park. To an ordinary observer it closely resembles *P. flexilis* in general habit and has here been confounded with it. The whiteness of the bark, which is a characteristic farther north and north-west, is hardly noticeable here, but the brown-purple young cones which fall to pieces at maturity, at once distinguish it from *P. flexilis*, the young cones of which are green and have persistent scales. These two species form about 10 per cent. of the forest area. The Yellow Pine (*Pinus ponderosa*) might be expected on some of the lower, drier areas, as it occurs in the Black Hills on the east, and on the west in Idaho and Montana, but it has not been observed.

The Douglas or Red Fir is found up to 9,000 feet, generally scattered over the drier grass ridges and slopes. It here does not compare in size with the magnificent specimens of the Pacific coast, although some trees observed had a diameter of five feet, but generally were stunted and unsound.

The Balsam (*Abies subalpina*) ranks next to the Black Pine in numbers and distribution. It is found throughout the Park in cool, moist situations, at low elevations on the northern slopes, and especially common on wet sub-alpine slopes and plateaus about the timber line, forming groves in the Park-like openings. On moist plateaus, above 8,000 feet, and the slopes and bottoms of deep cañons, are forests of this species and of Engelmann's Spruce, these two trees forming at least twenty-five per cent. of the forest area of the Park.

The Engelmann's Spruce is generally associated with the Balsam Fir. It is the finest tree of the Park, although not comparing in size with the specimens found in the extensive forests of this species, which occur further south in the central Rocky Mountain region. Still farther north it becomes rare and of small size. The White Spruce, which occurs in the Black Hills of Dakota and in Northern Montana, reaching its greatest development in the Flathead Region, probably does not occur within the Park. Some of the cones of *Picea Engelmanni* show a transition into those of *P. alba*. This fact is suggestive, occurring, as it does, in a region between that of that greatest development of *P. Engelmanni* on the south and *P. alba* on the north; although in north-west Montana, where both species occur, Professor Sargent has observed the same fact, but they are found "at different elevations, in different soils and never mingle."

The Red Cedar is occasionally seen along the lower, drier valleys. *Juniperus communis*, var. *alpina*, occurs on rocky slopes and more frequently about the hot spring areas. On moist slopes and along streams of the lower grass areas are often found groves of the Aspen (*Populus tremuloides*). Occasionally a Cottonwood (*Popu-*

lus angustifolia) will be met with in the same situations.

The bog and stream thickets are composed of some of the following shrubs: *Betula glandulosa*, *Salix desertorum*, var. *Wolfii*; *Salix glauca*, *Alnus incana*, var. *virescens*.

Of other species may be mentioned: *Salix longifolia*, *Betula occidentalis*, *Alnus viridis*, *Prunus demissa*, *Pyrus sambucifolia*, *Amelanchier alnifolia*, *Ceanothus velutinus*, *Rhamnus alnifolia*, *Acer glabrum*.

There are some areas of considerable extent throughout the Park which are not forest covered, and at lower elevations covered with a luxuriant growth of grass and more or less of Sage Brush. These comprise, perhaps, 220 of the 3,350 square miles of the Park. Add to this about 80 square miles for all minor areas, small parks, meadows, and regions above timber line, and 180 for lakes and ponds, we have a total of 480 square miles, or about fourteen per cent. of the area of the Park. We can, therefore, safely say that about eighty-six per cent. of it is forest covered.

Frank Tweedy.

United States Geological Society.

Correspondence.

"Which is the Better Way?"

To the Editor of GARDEN AND FOREST:

Sir.—In a recent contribution to your columns under the above heading the opinion is expressed that in a work of landscape gardening the best results will be secured when no trees are planted but such as it is essential to its design should attain mature character. The large parks of New York and Brooklyn present the strongest possible argument for this position, and no man can realize better than I do the danger of proceeding otherwise than as thus recommended.

Yet it may be questioned whether a passage may not here and there be found in these grounds, in which a moderate amount of thinning of densely planted groups has from time to time been secured, in which more refreshment is offered to town-worn men than could have been otherwise provided. And perhaps a few words of caution to young landscape gardeners not to follow the precept too literally may serve a good purpose.

If a client asks me how the very best results are to be obtained with liberal outlay on a given piece of ground, I may say nothing to him of nurse trees, such as are to be removed as a matter of course when their purpose has been served. I may begin my answer by reminding him that though we commonly speak as if trees of the same name were of identically the same nature, they do, in fact, vary one from another as they grow up, in form, color, habit, character, constitution and in the possession of vital force, quite as much as human beings of the same surname. There is a natural proclivity with some to a quiet, regular life, with others to comparative eccentricity; with some to robust, with others to delicate habits; with some to yield to enemies, with others to fight hard with them; with some to early decay, with others to long and vigorous lives. Hence, aside from the cultural advantages for young trees of close planting, "the very best results" are likely to be attained by planting two, three or four times as many trees of those of a common name, that are to have part in a group, as it is thought will ultimately be desirable to remain in it. In this case thinning is to be made afterwards by selecting from time to time that one of the number to be taken out that appears likely to contribute least to the value of the group (regarding the group, of course, as an element of a designed more comprehensive composition). Growing in this way the single tree that may be left after many years will not be asymmetrical a "specimen" as might have resulted from the planting of one tree only of the name, but the chances are that it will be a much more desirable tree for the place in which it stands. It will be larger, stronger, more truly representative. It will have a shape more like that of a tree that has triumphed in a contest of natural selection, and a shape better expressive of its incorporation with other trees similarly grown in the group in which it was originally designed that the individuality of all its trees should at last be merged.

And the young landscape gardener should not overlook the fact that if there is a liability to the miscarriage of a design in such cases through neglect of thinning, it cannot be reckoned with certainty that a miscarriage will always be avoided by planting no tree of any kind except where a tree of that kind can with advantage stand permanently.

Ten years after a place has been planted on the latter principle no two out of a hundred of its trees may yet have begun to grow into grouping connection one with another. None will, at best, be more than promising "specimens." All will not be that, for, through ice storms, cyclonic gusts, strokes of lightning, borers, climbing boys, runaway wagons, lingering diseases or the development of a cramped or a straggling habit of growth, some will be unpromising. The place will not have upon it a hundredth part of the whole body of foliage which, with a continued flourishing condition of all its trees, is to be eventually expected, for after ten years the bulk of foliage carried by most of our trees increases annually, for many years, at a very rapidly advancing rate. In a single year the leafage of a tree, under favorable circumstances, may double. If there have been disturbing circumstances in the landscape beyond the bounds of the property, such as may be caused by a rural cemetery or a fantastic villa with flaunting flower beds and iron fountains and statuary, they will not yet have been "planted out." Under these circumstances it is not improbable that those living on the place will have become impatient of its public, unfurnished and hobbledehoy character, and to get the better of it will fill in supplementary plantings, which will be quite as unfavorable to the realization of the design of the primary planting as the neglect of proper thinnings of a dense planting would have been.

To appreciate the liability of such a result one should have in mind what great blank spaces must be left between sapling trees if it is intended to give them room for anything like their possible full development. Two continuously flourishing Elms will eventually cross branches if planted a hundred feet apart. I have paced the shadow of one of a group of Oaks at noon-day which was a hundred and forty feet across.

As a liability to the miscarriage of a design in one way or the other can by no means be fully guarded against, the conclusion seems reasonable that a landscape artist no more than any other should be asked to school himself to have only standards in view that he can be sure will be appreciated and sustained by his clients and the successors of his clients. Perhaps the better "moral" is that in planting, as in all other operations of landscape gardening, what is the best way of proceeding is a question of time, place and circumstance. There should be no stereotyped work.

The subject cannot be dismissed without another word of caution.

In contending with the superstition that prevents the due thinning of plantations, I have found that the impression had sometimes been left on the minds of the inexperienced that under no circumstances is it good practice to plant trees so that when full grown their branches are at any point likely to meet and interlock. Every one who goes to Nature for instruction knows how she laughs at such a precept. As an example, consider a very common case in any region of old farms, where trees are seen that have grown from seedlings within a space of perhaps twenty feet on each side of a former fence. In a distance of fifty yards measured along the fence line there will be numbers of large trees, the trunks of which do not stand on an average more than ten feet apart. Their roots and branches spreading outwardly from the central line, these trees have had, on the whole, no serious lack of air, light or food, and their heads have grown into an unbroken body which could have been made more beautiful, if by any course of treatment, most assuredly not either by sparser planting or more trenchant thinning.

As to shrubs, no one can have failed to notice the value in landscape of low bodies of foliage of much denser growth than it is customary to have in view in any pleasure plantations. There will have been seen, for instance, in England, neglected hedges, chiefly of Hawthorn, that, a hundred years or more after planting, have spread into masses several yards in breadth. I have come upon such close about London as well as in remote rural districts, and I have never seen anything in park or garden more beautiful. In our South-western States there are to be seen similar, but broader, and, if possible, yet more admirable bodies of Cherokee Roses, with a sprinkling of other things, that the smallest bird could not make his way through; on our northern Atlantic coast broad patches of Bayberry, with stems considerably more than a hundred to the square yard; on the high Sierras acres of the Golden Chestnut equally dense; on the top of a North Carolina mountain, half a mile square, of Catawba Rhododendron growing so closely that the ground beneath it is as bare as if it had just been plowed, harrowed and rolled. No one seeing it can be disposed to ask if it would not be better worth seeing if it had been planted more scatteringly or been thinned out as often as branches came to interlock or to be bent upward.

There are many situations where trees would shut off a prospect, in which plantations of the character thus indicated would make a much better, overlookable foreground than shrubs standing in small groups and singly upon a body of turf kept by a lawn-mower.

Brookline, 15th April, 1888.

F. L. Olmsted.

To the Editor of GARDEN AND FOREST :

Sir.—I believe in American trees for American planting, as a rule. But our Apples, Apricots, Peaches, Pears, and most of our Plums, have come from other continents. And there is a nut tree which I have seen growing on the mountain sides and plateaus of the continent of Europe, as well as in Corsica and Sardinia, which furnishes an important article of subsistence to millions of people. I refer to the so-called Spanish Chestnut. The nut is ground into flour and made into bread, and the Hon. S. S. Cox, in his recent "Search for Winter Sunbeams," declares that the mountaineers of Corsica prepare their Chestnuts for the table in twenty different ways. Our native Chestnut flourishes from New England to Georgia, but its best nuts are comparatively little things. Why can we not grow the Spanish Chestnut as well as we have grown French Pears? On Washington Heights, Manhattan Island, I have picked half a peck of these nuts that had dropped from a tree twenty years after the seed was planted, and these nuts were as good as imported ones in every way. Farther North the summers may be too short to ripen the nuts before frost, but from the latitude of New York southward we might hope for a crop as certain as from our own trees. On soils where our native Chestnut flourishes an orchard of Spanish Chestnuts would be in bearing fifteen years from seed, and the crop would be much more valuable than the wheat crop, and would increase in value for many years. In California the so-called English Walnut, the Almond, and the Olive, have been introduced with profit. Would it not be worth while to try this European Chestnut on our own coast?

East Orange, N. J.

G. B. W.

[The cultivation of the Chestnut is an important and profitable industry in most of the countries of Southern Europe, and for centuries the improvement of the fruit, through careful selection, has been going on. The wild forms of the Old World Chestnut produce fruit no larger than our American Chestnuts, although selection and cultivation has now developed varieties three or four times as large.

This fact suggests the possibility of increasing by selection and cultivation the size of the fruit of the American Chestnut, which greatly excels all European varieties in sweetness and flavor, a possibility which should attract the attention of American horticulturists, who, in the improvement of our Chestnut, have an opportunity to increase the agricultural resources and the food supply of the Atlantic States. The Spanish Chestnut has hardly been sufficiently tested yet in any part of this country to justify its general introduction as an orchard tree. It is not very hardy at the North and often suffers in severe winters; in Virginia and in the more Southern Atlantic States, however, it should succeed as well as in Northern Italy; and this tree should certainly be more generally tested there than it has been heretofore. The Japanese form of the Chestnut promises to become a valuable addition to our ornamental, and, possibly, to our orchard trees. It is hardier than the European varieties, and although the fruit is smaller, it is sweeter and better flavored. The best varieties of the Spanish Chestnut can only be propagated by grafting, as seedlings are apt to revert to the wild form. We shall be glad to learn of the experience of our readers in the Middle and Southern States with this tree.—Ed.]

Recent Publications.

The Illustrated Dictionary of Gardening; A Practical and Scientific Encyclopædia of Horticulture for Gardeners and Botanists. Edited by George Nicholson. London; and in New York by Orange Judd & Co., 1887-88.

Three volumes of this work have now appeared, and the fourth and last may be expected in a few weeks. The earliest, and still the most famous, Dictionary of Gardening, is that written by Phillip Miller. It was published in London in 1731,

and ran through eight editions. No book about plants contains quainter expression or sounder instruction and advice. George Don published in London in 1831, "A General System of Gardening and Botany," as a new edition of Miller's Dictionary, but this is a book for botanists rather than for gardeners. Johnson's "Gardener's Dictionary" followed this in England, some years later, and for a long time maintained a standard position in horticultural literature. But the great improvements that have been made in horticultural methods, and the vast numbers of new plants which gardeners are called upon to cultivate in these days, make a new general treatise upon gardening and garden plants in the English language a necessity. The work which is now before us fully supplies the need, and surpasses all its predecessors in completeness, convenience of arrangement, and in the number of its illustrations.

The arrangement is alphabetical, and it contains the Latin names of all the genera of plants found in English gardens, with a short generic description, and under each genus, in smaller type, all its species in cultivation, arranged alphabetically, each, also, with a short description, an asterisk marking those species which are especially good or distinct. English names, of which a great number are given, and Latin synonyms, are referred to the Latin name of the plants to which they belong. Much space is given to florists' flowers and horticultural varieties, some important genera, like the Rose or the Chrysanthemum, occupying many pages, with detailed illustrated descriptions of all the best varieties. Insects injurious to garden plants are figured and described; and very carefully illustrated articles are devoted to all horticultural operations, like grafting, budding and pruning. An article upon the Cucumber contains descriptions, not only of all the best varieties, but descriptions and plans of the most approved glass-houses in which to grow them. A dozen pages are devoted to the Pear, and its best varieties, and the insects which are injurious to it, and other English fruits and vegetables, are treated in the same exhaustive manner. Most useful is the information found in this book relating to the derivation of the generic names of plants—information rarely given in works on botany, and not always easy to obtain.

Any plant, no doubt, can be cultivated successfully, if study and patience enough is given to its care, but some plants are so impatient of confinement, and some are so difficult to manage, that they have little value to the ordinary gardener. Amateurs want to know the defects and drawbacks in a plant in cultivation as well as its good qualities. They always hear enough about the latter before they buy, but very little about the former. And it is in books of this character that such information would naturally be looked for; but while it contains excellent suggestions for the cultivation of an immense number of plants, little or nothing is said in these volumes about the drawbacks to any particular species or variety, an omission which those amateurs who are at the mercy of glowing nursery-catalogue descriptions, will probably often have occasion to regret.

Mr. Nicholson has been assisted by Mr. J. Garrett, who has prepared those portions of the work relating to fruit and vegetable culture, florists' flowers and general gardening work; by his associate at Kew, Mr. W. Watson, and by Professor Trail, who has written the articles on fungi, insects, and the diseases of plants. He and his associates deserve the thanks and should receive the congratulations of the horticultural world. They have produced a work which is indispensable to all persons whose studies, business or pleasure bring them in contact with garden plants.

Notes on the Bald Cypress (Taxodium distichum), by N. S. Shaler. *Memoirs of the Museum of Comparative Zoölogy*, Vol. XVI., No. 1.

The functions performed by the peculiar woody growths or "knees" which spring from the roots of our southern Cypress have never been very clearly understood, but Professor Shaler has now collected a series of facts which seem to substantiate his theory that they are in some way connected with the process of aëration of the sap. The facts are these: The knees are not developed when the trees grow on high ground. (This is still more apparent in Mexico, where the same species, probably, or a second and very closely allied species, grows only on dry ground at a considerable distance above the water-level of the streams.) They are always developed when the roots are permanently covered with water. The "knees" rise above the permanent water-level and vary in height with that level. Finally the trees die, when from any accidental cause the water rises above the tops of the "knees." These facts certainly most "incontestably show that there is some necessary connection between them and the functions of the roots when the latter are permanently submerged."

There has always been some doubt how the seed of the *Taxodium*, falling in deep water, could germinate, and yet young trees are often found in the Cypress swamps, which never become dry, growing in several feet of water. Professor Shaler is inclined to believe that such trees are not seedlings, but that they have sprung from branches, blown down from neighboring trees, which have taken root.

Retail Flower Markets.

NEW YORK, May 5th.

Business throughout the city is quiet, funeral designs and steamer baskets being all that keep it alive. The introduction of fruit into floral designs for steamer gifts interferes with the florists' revenue. Flowers have improved in quality during the week, those from bulbous plants especially being much finer as their quantity has declined. The novelty in first-class shops is Moss Roses. They cost 50 cts. a spray of one half-opened bud and one green bud. Catherine Mermet Roses are prime, and cost \$2 a dozen, as do the Bride, La France and Madame Cusin. General Jacqueminots are superb in color, and of good texture; they bring from \$2 to \$4 a dozen. There are but few Papa Gontiers arriving; these cost the same as Bon Silenes—\$1 a dozen. Perles des Jardins and Niphotos are \$1.50 a dozen. The latter are of such size and beauty that they are almost as much sought as the Bride. Puritan Roses are finer than they have been at all this season; they sell for 50 cts. each or \$5 a dozen. American Beauties bring from \$5 to \$8 a dozen. Baroness Rothschild and Mabel Morrisons run small, but are exquisite in form and color; selected blooms may be bought for \$8 a dozen. Paul Neyrons do not arrive in as good form as last week, and Ulrich Brüner shows signs of holding its petals loosely. The average price for all Hybrids may be set down as \$5 a dozen for second choice and \$8 for selected stock. Lilac is choice at \$1.50 a bunch; Mignonette is 50 cts. a bunch of twenty-five sprays. Marguerites are 20 cts., Carnations 35 cts., and Forget-me-nots are 25 cts. a dozen; Heliotrope is 50 cts. a bunch, Callas 20 cts. each, Gardenias 25 cts. each. Trailing Arbutus of delightful color and fragrance appears from Long Island and is 50 cts. a bunch. Violets grow poorer and scarcer; they are from 75 cts. to \$1.25 a bunch. Meadow Cowslips (*Calltha palustris*) from New Jersey marshes are sold in quantities on the chief thoroughfares for 5 cts. a bunch. Daffodils, Lily-of-the-Valley and Tulips cost from 75 cts. to \$1 a dozen. Smilax is somewhat more plentiful as the demand relaxes; it remains as last quoted, as does *Asparagus tenuissimus*.

PHILADELPHIA, May 5th.

Owing to the extremely warm weather, flowers were abundant everywhere early in the week. The only scarcity was of white Carnations and Lilac. It is between seasons for the last. Frequently it is in bloom here out-of-doors at this date. Last year a supply was obtained from Washington between the times when the stock for forcing was exhausted and that out-of-doors had not commenced to bloom. The warm weather also had a tendency to clobber the demand for flowers, but the returning coolness has braced up the market considerably. May usually brings a break in prices here, but this year very few flowers are blooming in the open air. Next week we may with confidence expect to report lower prices for nearly every class of flowers. Some of the dwarf Cannas are destined to be used for cut flower purposes hereafter. They are easily forced, and will add a new feature to floral decorations. Some of the spotted varieties are extremely showy, and flowering, as they do, when only two and a half to three feet high, they will not occupy much space in comparison with the older varieties. Smilax is becoming more plentiful and better in quality.

BOSTON, May 5th.

Mayflowers everywhere. The always welcome Arbutus is now in the height of its season, and its popularity. The flower stores give it the cold shoulder, but there is no scarcity on the street corners and it forms for the time being the universal corsage bouquet, while the violet quietly drops to the rear and will soon disappear for the season. There are still some violets to be had, but they are small and pinched looking. A few of the true English Violet are offered. These are only seen in the spring. The stems are too short, but the rich dark blue color and unequalled fragrance make them popular in spite of the short stems. These sell for 50 cts. a small bunch. The flower shops are filled now with grand specimens of *Hydrangea Otaksa*. Plants three feet high and three feet across sell from \$8.00 to \$12.00. With a little care their beauty will last from one to two months in an ordinary dwelling-house. Neat plants of moderate size bearing several heads of flowers, cost from \$3.00 to \$5.00 each. But few first-class Roses are seen, and they bring winter prices. The best Hybrids, such as Baroness Rothschild, Puritan and Mabel Morrison, are worth from \$6.00 to \$8.00 per dozen blooms, and American Beauty, when first-class, sells with them. Catherine Mermet, Marshall Niel and La France are worth from \$2.50 to \$4.00, according to quality. Lily-of-the-Valley is in better demand and the quality offered is uniformly good. Price, \$1.00 per dozen sprays. There are still many forced Tulips and Narcissus in the market, but a few more warm days will bring the outdoor crop in. Till then the price of these is 75 cts. to \$1.00 per dozen. Harris's Lilies on long stems are abundant and are sold as low as \$1.50 per dozen. Mignonette has become a standard flower. Sprays of the large varieties sell readily for \$1.00 per dozen. Among the novelties offered are some fine blooms of double Ranunculus.

GARDEN AND FOREST.

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The Improvement of School Grounds.

THE ordinary surroundings of an American public school-house are not attractive. Rarely are they shaded or turfed; more rarely is any attempt made to make the dusty ground of the traditional school-yard, or its trampled and muddy surface, even neat and pleasant to the eye. A good deal of money is generally expended in surrounding the school-lot with an imposing and generally hideous and inappropriate fence, and then the external decoration of the building is considered complete.

The discussion which this condition of things has given rise to in the columns of some of our contemporaries are suggestive of what may be accomplished in rural improvements of this character, and should bring about a much needed reform in the treatment of school-grounds throughout the country. A series of illustrations, showing a number of small country school-houses before and after the improvement of the grounds, which appeared in a recent issue of *Popular Gardening*, should be in the hands of every country school-board and every country school-teacher in the United States. Few people realize what a change in the appearance of a building the expenditure of a few dollars in planting trees and shrubs about it, and in improving the lines of its approach, can make. This these illustrations admirably show. Such simple improvements can be made to exert something more than an æsthetic and civilizing influence upon a body of school-children. They can be made to play a direct and important part in their practical instruction. The people of this country are singularly ignorant about trees, their real characters, their mode and manner of growth, their uses, and their names even. How many intelligent and well-educated men or women are there in this country who can distinguish the different Maples which they see in their daily walks, or know by sight the different Hickories, or Oaks, or Pines? Many persons who consider themselves accomplished botanists, know Ferns, and even Grasses, perhaps, or Mosses, or some of the

other lower plants, much better than they know the trees which surround them. Appreciation comes with knowledge, and until our people learn about our trees—their value, their qualities and uses, the history of their lives, their distribution and relationship to the trees of the rest of the world—they will neither really appreciate nor value them, or learn to care for and protect them. If there is ever in the United States a stable, successful and popular system of forest control and forest management, applicable alike to the forests of the State and to the humble wood-lot of the smallest farmer, it will rest upon a basis of knowledge of trees and their importance to the community, commenced in the primary schools.

If our cities and villages are ever properly adorned with well selected trees, well planted and well protected, this will be brought about through an appreciation of trees born of seed planted in country school-houses. The smallest school-grounds in the humblest community can be made to contribute to the knowledge and the subsequent love of trees. There is no school-lot so small that a place cannot be found in it for one or two trees or shrubs; and with a little care and judgment in selection, most country school-yards might contain representatives of the important trees and shrubs, and some of the lesser plants, peculiar to their immediate vicinity. Native trees should be selected for this purpose, not only because they are the best for the purpose, but because a child should first learn about the trees which he meets in his every-day life, and therefore most readily impressed upon his memory. School-yard trees should be correctly and conspicuously labeled with the English and the botanical names, in order that the name may become associated with the tree in the child's mind; and every teacher should be able to give some simple instruction, not only in regard to the characters and uses of the trees which surround the school-house, but of other trees as well.

Lessons of this simple character—object lessons in Nature—learned without an effort in early childhood, are never forgotten, and, sooner or later, bear good fruit and open the way to many delightful and lasting pleasures which most Americans are now deprived of through lack of proper early training.

School grounds in cities and large towns where land is expensive and the number of scholars large, are rarely suitable for this purpose, but the parks and squares of such cities, if properly used by teachers, can be made of much greater educational value than they are at present. Classes can always be taken into public grounds and the nature of the trees and plants which they contain explained.

That teachers and pupils alike may get the greatest advantage from the opportunities which most of our cities offer for object teaching of this nature, the trees and other important plants in public grounds should be correctly and legibly named. The whole community, and not the children and their teachers alone, derive a benefit and much real pleasure from this practice.

The trees on the Common and Public Garden in Boston have been very generally and successfully labeled; and the same thing has been attempted on a smaller scale in the Central Park in this city and in the Capitol grounds in Washington.

It might be extended with advantage to all the public grounds in the country.

Villas and Their Doorways.

WHEN the building of a detached suburban house is contemplated—whether it be a simple cottage or a more ambitious villa—the first point to be decided is, of course, the position of the house as regards distance from the street. Cases are rare in which the configuration of the ground determines this question; most often it depends merely upon the size of the lot and the taste of the owner. In former days the house was usually placed quite near the

street, such lawns and gardens as it might have lying in the rear—as we see, for instance, in the most dignified streets of Salem and of countless smaller New England towns. To-day the more usual custom is to set the house well back from the street, leaving room in front for a lawn with trees and shrubs, and in the rear for a flower or fruit garden, and often a stable. Such an arrangement, consistently followed, is certainly the best as regards the general aspect of the street, giving it width and dignity and a pleasing combination of natural with architectural features. And it is probably best, too, as regards the comfort and pleasure of the average owner; for while it removes his windows from the immediate neighborhood of the street, it permits him still to take a contemplative part in the life of the street over a foreground green and pleasant to the eye; and this privilege is more valued by the average American than, for example, by the average Englishman, while he has not the Englishman's feeling that to enjoy his own private share of Nature's beauty he must carefully seclude it from the eyes of others.

We may accept this arrangement, then, as the typical one for an American villa, and pass to the consideration of a question which deals with a matter almost as important as the position of the house itself. This is the question, Where should the main doorway of the house be placed? And it is so important because upon the answer to it will depend not only the plan of the house itself, but, to a great degree, the plan and effect of the grounds as well. From the architect's point of view it may almost always seem uncontestedly best to put the entrance in the front of the house, for, especially in small and simple buildings, he must depend upon it as one of the chief features in his design. Yet even at the sacrifice of a certain portion of architectural effect it may often be better to place it in a less conspicuous position.

A gravel or asphalt walk, intrinsically considered, is not a pleasing feature. It is simply a useful feature which should not be introduced unless necessity compels, and should always be kept as inconspicuous as convenience will allow. Whether it be straight or sinuous its action is the same—it cuts up the ground into two parts; and too much thought and skill cannot be expended in lessening the injury to unity and breadth of effect which this fact implies. If the space available for a lawn between the house and the street is narrow, it is all the greater pity to cut it up with lines of gravel; and if it is wide, then it is still a pity to sacrifice the chance for beautiful gardening effects which it affords. Place the main doorway in the front of the house, and a path must, of course, give direct access to the street; and if horses are kept, the impulse will be to make the path a driveway, although the broader the line of gravel, the more serious, of course, is the injury to the lawn. It can hardly be disputed that unless grounds are so extensive as to merit the name of a country-place rather than of villa-grounds, a driveway should never be allowed to pass through them on the side towards the street. Whether the outlook is inward from the street or outward from the windows, it will injure the effect more seriously than any other feature that is likely to be desired.

When horses are kept and a stable stands in the rear of the house, it is decidedly desirable, therefore, that the main doorway should be placed in the side of the house. Then all the drive required will be a single stretch, entering the grounds near their outermost angle and passing the door on the way to the stable. It need hardly be pointed out how much less offensive is such a drive than the one we often see even in very small grounds—cutting through their whole extent on the street side and then encircling the house to reach the stable, and often having an additional curve and an additional gateway to allow of entering and leaving the grounds without going into the stable-yard to turn.

If there is no stable, but the necessity of having a direct carriage-approach is nevertheless felt, the same arrangement commends itself, of course, for the same reasons. But

in such a case the necessity in question is much more apt to be fanciful than real. A short walk to the carriage is seldom uncomfortable, even to the feet, except in winter; and a narrow board walk temporarily laid down over the asphalt or gravel will cheaply do away with the greater part of the inconvenience that winter brings. Unless he keeps horses in a stable on the place, or unless there is an invalid in the family whose comfort must be the first consideration, an owner who cares at all for the beauty of his grounds will sacrifice his carriage-approach without a pang.

Yet even if it is sacrificed there are still good reasons why the entrance should perhaps not be in the front of the house. If it is there, we repeat, a walk is still required, and the narrowest will still be a disfigurement to the lawn—and the smaller the lawn, the greater the disfigurement. The space to be traversed from door to street will not be perceptibly lengthened by placing the door in the side of the house. No injury to the plan of the interior need result from the fact—for even if the door admits not to an old-fashioned narrow entry, but to a hall which is used as a living-room, a little ingenuity will suffice to make some of the windows of this hall command the front prospect. Again, unless the grounds are of much more than average breadth, the front of a villa is the best place for loggias or piazzas for the use of the family in summer; and such features are better adapted to their purpose when disconnected from the entrance and protected from the immediate access of visitors, while by carefully planting near the street-line and the piazza, and carefully designing the piazza itself, it will often be possible to secure a due degree of privacy as regards passers in the street.

We do not say that there may not often be good reasons for choosing the front instead of the side of a villa as the place for the main doorway when a carriage-approach thereto is not required, or that architectural effect intrinsically considered has not always a right to much attention. What we have wished to point out is that with small grounds the side of the house is decidedly the better place for the door when a carriage-approach must be combined with it, and that in all cases it will be well to consider its position carefully before the architect begins his design.

The Attack on City Hall Park.

The project to erect a huge Municipal Building in City Hall Park has been temporarily arrested by the interference of the State Legislature. Even if the new building would have any architectural merit, which is an improbable supposition, it would appear that any scheme to overshadow and belittle the old City Hall, which has a beauty of its own, not to speak of its age and associations, would find little favor. But apart from this, the project, which is by no means dead, is here spoken of as another illustration of the danger that constantly menaces parks, and every other open space, in our rapidly growing cities.

As land becomes expensive every foot not covered with brick and mortar seems wasted, and the pressure to encroach upon it, and "improve" it in some way, is almost irresistible. Here in New York, which has a smaller acreage of public ground in proportion to its size and population than any other considerable city in the civilized world, it might be supposed that a few rods of greensward and a cluster of trees would be appreciated and protected. But what was St. John's Park a few years ago has been covered up by a huge freight station. The Battery, beautiful for situation, and a priceless blessing to the thronging population about it, has been invaded by a railroad, which never rests from its effort to extend its tracks and condemn a still larger portion of it to ruin. From the City Hall Square itself a section has been already taken for Mr. Tweed's Court House and another for the Post Office, and now comes the present threat to absorb the greater fraction of what remains.

Some of the very men who are active in this project to obliterate City Hall Park, secured but a year ago the passage of an act to authorize the expenditure of a million dollars a year to construct new parks in the thickly peopled wards of the city. But if ever these new parks transform a tenement house district into an inviting neighborhood, they, in turn, must begin the same struggle for life which the older ones have been making for so many years, and with so little hope. No urban park is safe until public sentiment is educated up to a controlling belief that breathing space in a city is quite as essential to the mental, moral and physical health of its people as building space, and that the very best use to which a certain portion of its territory can be put, is to cover it with greensward and keep buildings off of it.

The *Revue Horticole* calls attention to the value of the oil yielded by the seed of the "Oil tree" of China and Japan, *Aleurites cordata*, or perhaps more correctly *Elæocca cordata*. This tree resembles in habit and in foliage the common Fig tree. The fruit is a capsule the size of an Orange, formed of several cells, each containing a large thick-shelled seed. These seeds contain an active purgative principle, and are not edible. They contain, however, forty per cent. of their weight of a clear, colorless, limpid oil, possessing remarkable siccative properties. This oil is used largely in China and Japan in the manufacture of lacquers, in making water-proof cloths, and in painting buildings and for lights. An Oil tree five or six years old may be expected, it appears, to produce an average annual crop of from 300 to 400 pounds of seed. It thrives on dry, sandy, rocky soil, and has been found to succeed in some parts of southern France, where, and in Algiers, its more general cultivation is now urged. Experiments with this tree should be made in California, and as it is found in the northern Island of Nippon, it may be expected to be hardy in many parts of the United States.

The principal flowers, especially the different varieties of Roses, in some of the florists' windows in Boston, are now conspicuously labeled. This adds much interest to these displays, and gives them a real educational value. It is a habit which might be adopted with advantage in other cities.

Tubercles on Leguminous Roots.

IT is generally believed that leguminous crops tend to increase the nitrogenous matters in the soil. It is also known that tubercles, often as large as peas and sometimes larger, are frequently formed on the roots of Beans, Peas, Clover and many other Leguminosæ, and the question has been asked whether there is any relation between the formation of the tubercles and the increased amount of nitrogen in the soil. Although the tubercles were observed long ago by Malpighi, it was not until the researches of Woronin, published in 1866, that any definite account of their structure was given. Woronin found in the cells of the Lupin-tubercles small bodies which he thought were bacteria, or something like them, and he regarded the tubercles as diseased structures. The views of Woronin were accepted at the time, but recently the subject has been studied by a number of botanists, and the results published have been so at variance with one another, that one is still perplexed to decide whether the tubercles are really the result of disease caused by some parasitic growth or whether they are normal developments of the roots.

Without speaking in detail of the many articles on the subject which have appeared within the last five years, it may be said that hardly a year ago a well known writer, in reviewing recent observations on the nature of the tubercles, stated that we could now consider it proved that the bodies which Woronin supposed to be bacteria are in fact not bacteria, but bacteroids or bodies of a nitrogenous charac-

ter which serve as reservoirs of the surplus nitrogenous material stored up by the plant. Hence, regarding the tubercles as normally produced organs loaded with albuminoids, it would be easy to understand how a soil might be enriched, as far as its nitrogenous composition is concerned, by the growth of leguminous crops.

Unfortunately, however, the question, which a year ago was supposed to be so satisfactorily settled, is now once more brought into the list of disputed questions. Prof. H. Marshall Ward, in a paper on the tubercular swellings on the roots of *Vicia Faba*, gives a clear and accurate account of the tubercles which he thinks are morbid growths and not normal reservoirs. Besides the bodies resembling bacteria, there are hyphæ or threads of a somewhat peculiar structure found passing through the cells in the interior of the tubercles, and it is his opinion that they enter the tubercles through the root-hairs on the surface. Although it is not certain how the bacteria-like bodies are formed, Prof. Ward is inclined to regard them as more like some of the yeast plants than bacteria and it may be that they are produced by budding from the tips of the hyphæ. At any rate, several facts indicate that the tubercles are not normal structures, but are produced by contagion due to germs or spores in the soil. Plants grown carefully in soils which have been heated so that all germs have been killed do not produce tubercles nor do plants grown in chemically pure fluids. Tubercles may be produced on plants grown in water-cultures by placing pieces of old tubercles on the young roots. The subject is a difficult one to study. Admitting that the origin of the bacteria-like bodies still requires investigation, it can safely be said that the tubercles are not normal structures. The peculiar threads or hyphæ can be seen by any observer, and, as they pass through from one cell to another, it is far more likely that they are parasites than that they are the cell contents modified in some way. It may be, as some have supposed, that the bacteria-like bodies have no connection with the hyphæ. That question seems to us still open, although the parasitic origin of the tubercles seems established.

W. G. Farlow.

We learn with great regret of the death of the Councillor of State, Dr. Pancic, at Belgrade, in Servia, at over seventy years of age. This distinguished scholar, who was widely esteemed, and was especially beloved for the charm of his personal qualities, devoted his life to botanical and zoölogical investigations in his native country, and achieved most noteworthy results in these lines of study. His was the enviable lot of being able to combine patriotism with science, and to develop his activity on wholly unexplored ground. His name is connected with the botanical opening of Servia, and will always be associated in the most honorable manner with the history of that country. Among the trees which he discovered it suffices to mention *Picea Omorika*, a very beautiful and characteristic species of Spruce. To the last years of his life belongs a most interesting discovery in dendrology—that of the Cherry-Laurel (*Prunus Lauro-Cerasus*),—for which Pancic first fixed a European habitat in the Servian Balkans, thereby determining for this shrub, which until then had been known only in Asia Minor, a much wider geographical range.

Botanical literature owes to Dr. Pancic a number of works, the subject of which is mainly the Flora of his native land, but which deal also, in part, with that of Bulgaria and Montenegro. Dr. Pancic lived in the most favorable circumstances. The natural science of a whole country seemed to a great extent to be embodied in him alone. He was King Milan's teacher, and enjoyed to the end of his life the entire confidence of this prince, as well as in equal degree the respect and admiration of his fellow-countrymen. He took a special interest in directing the Botanical Garden at Belgrade, which was founded but a short time ago, and is now under the practical control of a most competent young specialist, Garden-Inspector Bornmueller.

Berlin.

C. Bolle.

A Well-arranged Flower Border.

THE illustration we publish on page 137 shows another portion of the artificially formed pond, on a country place near Boston, which was pictured and described in the first number of GARDEN AND FOREST. The point to which we would now call particular attention is the flower border in the foreground, which extends much further to the spectator's left than the photographer was able to follow it, skirting the edge of the pond for a considerable distance.

In the earlier weeks of June this border offers a splendid sight and fills the air with a delicious fragrance; for then the hardy Azaleas, with which it is chiefly planted, are in bloom, showing many tints of orange, yellow, pink and white, which contrast and blend with each other in a way that might well tempt an artist's brush.* Yet this is not the only season when this border is beautiful and fragrant; for it has been planted so that a succession of flowers follow one another throughout the entire summer. Among the Azaleas hundreds of bulbs have been planted, which bloom in spring when the foliage of the Azaleas is still thin and delicate enough to permit their lowlier loveliness to appear; and the border of the pond is fringed with the great peltate California Saxifrage, the tall flower-spikes of which—two feet in height—appear in very early spring before the big, broad leaves expand. Then, rising well above the Azaleas, are groups of Lilies, pleasing to the eye in their slim, though flowerless, grace, even in the earlier weeks of summer, and ready to bring forth their flowers when the Azaleas have done blooming. The tall spikes which are conspicuous in the immediate foreground belong to the finest of our native Lilies—the Turk's Cap Lily (*Lilium superbum*). The dark clump further in the distance is a clump of the *L. umbellatum* of Japan; and the Japanese *L. lancifolium*, with its spotted blossoms, is also represented, as well as the white Japanese and the common Tiger Lily. Nor are these all the plants which mingle in this border. When the Azaleas are in bloom blue and yellow Irises are also in bloom along the water's edge; in August the delicate blossoms of the *Sabbatia* appear profusely; and in autumn days there is the Cardinal Flower and the Galtonia, with its tall spikes of white, bell-shaped, Hyacinth-like blossoms.

It is needless, we believe, to explain the superiority of planting of this sort to that most commonly seen. What is most often seen is a border filled with one kind of flower alone, or if with a succession of flowers, one that involves continual transplantings and rearrangements. But here, by a wise choice of materials, the border is enabled to take care of itself from one end of summer to the other. Here there is no need to dig up the bulbs when they have flowered, under penalty of a dreary display of withering leaves; they may be left to mature in peace against another season, the decay of their leaves being hidden by the luxuriance of the other plants. It is the same with the Lilies; and as none of the plants selected require protection in winter, the border renews its beauty summer after summer, and week by week during each summer, with but little care from man.

A word may be added with regard to the meadow that forms the distance in our picture. Its clumps of trees have been carefully arranged, but the grass is left to grow long, and, filled with Buttercups and Daisies, makes a soft and harmonious background for the brilliant border as we approach it, and is in happy contrast with the carefully kept lawns on the other side of the pond near the house.

'Laying out grounds, as it is called, may be considered as a liberal art, in some sort like poetry and painting; and its object, like that of all the liberal arts, is, or ought to be, to move the affections under the control of good sense; that is, of the best and wisest. Speaking with more precision, it is to assist Nature in moving the affections, and surely, as I have said, the affections of those who have the deepest perception of the beauty of Nature, who have the most valuable feelings—that is, the most permanent, the most independent, the most ennobling, connected with Nature and human life. No liberal art aims merely at the gratification of an individual or a class; the painter or poet is degraded in proportion as he does so; the true servants of the Arts pay homage to the human kind as impersonated in unwarped and enlightened minds. If this be so when we are merely putting together words or colors, how much more ought the feeling to prevail when we are in the midst of the realities of things; of the beauty and harmony, of the joy and happiness of living creatures; of men and

children, of birds and beasts, of hills and streams, and trees and flowers; with the changes of night and day, evening and morning, summer and winter; and all their unwearied actions and energies, as benign in the spirit that animates them, as they are beautiful and grand in that form and clothing which is given to them for the delight of our senses."

Wordsworth.—Letter to Beaumont.

Foreign Correspondence.

The Kew Arboretum.—IV.

THE genus *Quercus* is represented in the Kew Arboretum by upwards of two hundred species and named varieties. The common British Oak (*Q. pedunculata*) heads the list as far as variability is concerned, with about forty-five forms; of the other segregate of the Linnean *Q. Robur* (*Q. sessiliflora*) we have about a dozen. In a wild state the latter is much the rarer of the two, both in Britain, and, apparently, on the continent of Europe as well. Judging from the evidence afforded by trees found deep down in peat bogs, etc., in various widely separated localities, *Q. sessiliflora* was at one time a much more common tree; at present, circumstances seem to point conclusively to the fact that the species is in reality dying out. I use the word species advisedly, for the general aspect of the typical plant is so different from that of *Q. pedunculata*, that the two may be readily recognized, when growing together, even at a distance. Besides for arboricultural purposes, and to avoid too cumbersome a nomenclature, it is better to treat the two as distinct.

There are some half a hundred American Oaks—many, of course, forms which have originated under cultivation—and among them twenty-two of the species enumerated by Professor Sargent in his Catalogue of the Forest Trees of North America. Upwards of thirty hail from Asia and about seventy from Europe and North Africa. The last number of course includes the two British Oaks and their forms mentioned at the beginning of this article.

Remarkably fine examples of the Scarlet Oak (*Q. coccinea*), the Red Oak (*Q. rubra*) and the Willow Oak (*Q. Phellos*) exist in different parts of the Arboretum, but in common with all the other American biennial-fruited Oaks, few bear acorns, although the trees grow luxuriantly and are perfectly hardy. Of the Willow Oak I have never seen flowers produced at Kew; the other two whose names are above given flower annually but rarely ripen fruits; the foliage, however, as well as that of the Pin Oak (*Q. palustris*), the Yellow-barked Oak (*Q. tinctoria*), the Shingle or Laurel Oak (*Q. imbricaria*), assumes generally a brilliant color before the fall, and so enables non-traveled tree-lovers to form some idea of the brilliant effects described so enthusiastically by writers familiar with the forests of the United States. The whole group of the White Oaks is unsatisfactory at Kew, and so far as I have been able to ascertain from personal inspection, on the continent of Europe as well. Some conditions necessary for the trees are evidently lacking, for all present a stunted, unhappy aspect.

The Evergreen or Holm Oak (*Q. Ilex*), of Southern Europe, thrives well and attains a large size; during some winters huge branches are broken off by the weight of snow. The Live Oak (*Q. virens*) does not at present exist in the Kew Arboretum, and plants so named, in other English establishments which I have had an opportunity of seeing, are merely forms of the very variable *Q. Ilex*. Probably, however, the Virginian Live Oak may be growing in the Southwest of England. One of the most handsome of the European Oaks is *Q. conferta*, or, as it is usually called in gardens and nurseries, *Q. Pannonica*. This is a native of Servia, Croatia, Transylvania, etc., and in Kotschy's magnificent work, "*Die Eichen Europa's und des Orients*," he tells us that its timber is very durable, woodwork of it found in the Transylvanian mines which have not been worked since Roman times presenting the appearance, notwithstanding its great age, of newly-felled timber. In a

* An article in GARDEN AND FOREST, March 21st, 1888, speaks of the most valuable varieties of hardy Azaleas and of their needs in cultivation.

young state at any rate, the growth of *Q. conferta* is more rapid than that of our indigenous species.

For several years a specimen of the curious shrubby oak (*Q. reticulata*) from Southern Arizona and Mexico, withstood, in a somewhat sheltered spot it is true, the rigors of our English climate, but having braved the hard winter of 1879-80, it gave up the struggle to exist during the equally trying one of 1880-81. None of the characteristic Himalayan Oaks are hardy at Kew and some of the Japanese ones do not succeed. Several, however, from the latter country, do well and are perfectly hardy. *Q. acuta*—a handsome, very variable species with thick evergreen leaves—perhaps better known under the name of *Q. Buergeri*, comes under the latter category. On the other hand,

almost entirely shed as the young ones are bursting their buds—forms of the Turkey Oak (*Q. Cerris*), do wonderfully well at Kew. The Lucombe and Fulham Oaks are two of the best of these; practically they may be regarded as identical, for the differences between them are very slight. In his "*Arboreum et Frulicetum Britannicum*" Loudon says: "The age and origin of the Fulham Oak are unknown; but Mr. Smithers, an old man who has been employed in the Fulham nursery from his youth, and who remembers the tree above forty-five years, says that it always went by the name of the Fulham Oak, and that he understood it to have been raised there from seed. We have examined the tree at its collar, and down to its main roots, several feet under ground; and, from the uniform texture, and thick



A Well-arranged Flower Border.

Q. dentata of Thunberg (*Q. Daimyo* of gardens) is apt to suffer severely during an exceptionally hard winter; this species is, however, well worth a place in any collection of ornamental trees on account of its noble leaves—one I measured some four years ago, in the Isleworth Arboretum of Messrs. Charles Lee & Son being no less than eighteen inches in length, with a width, at the broadest part, of ten inches. *Q. dentata* is also especially interesting by reason of its being one of the food plants of a Chinese silkworm, a long account of which is contained in the "Commercial Reports from Her Majesty's Consuls in China and Japan, 1865."

The evergreen, or rather sub-evergreen—for the old leaves, although remaining on the tree throughout the winter, are

corky character of the bark, we feel satisfied that it is not a grafted tree." A few years ago, however, before Messrs. Osborne's nursery was broken up, I saw this same tree, and shoots of *Quercus pedunculata* were springing from the trunk, proving that the specimen was a grafted one and that in spite of his careful examination Loudon was deceived. Another Oak, figured and described by Dr. Masters in the *Gardeners' Chronicle*, series ii., vol. xiv. p. 715, under the name of *Q. glandulifera* of Blume, is, I have little doubt, a curious hybrid of which the Turkey Oak is one of the parents. At any rate, it is not the typical Japanese plant described originally under the name of *Q. glandulifera* by Blume.

George Nicholson.

London Letter.

CAMELIAS are backward this season, but among those now in full beauty at Veitch's nurseries none can eclipse the variety C. M. Hovey, for which, I believe, we are indebted to one of your Boston nurserymen. The perfect form of the flower, its charming, soft, rosy carmine color and large size make it one of the most admired of Camellias, and of its color it is peerless. Camellias are not so popular here as they were formerly, because they have been supplanted by Roses since the early forcing of these flowers has become so well understood. People like the exquisite, if somewhat stiff and artificial, form of double Camellias, and are delighted with their soft colors, but lacking perfume, they can never rival the Rose. In Paul's nurseries at Waltham Cross, where, of course, the Rose reigns supreme, there is one of the finest collections of Camellias in this country. A lofty and spacious house 100 feet long is devoted entirely to the huge specimens which make at this season a magnificent display. On going through the house the other day I jotted down a few of the sorts which to me were most conspicuous and the most beautiful. Of whites none was superior to old Double White. More of this old sort are grown and more sold than of any other, it being indispensable in every green-house. Another good white is Ninfa Egeria, more floriferous than Alba plena, and not so large, but quite as double. Innocenza fimbriata and Alba elegantissima are likewise very fine white. The more brilliant colors (crimson and reds) are best represented by Imbricata Mathotiana, Manara, Benneyi Coquettina and Auguste Delfosse. The lovely pinks and delicate rose tints are favorites with every one, and I singled out Marchioness of Exeter, L'Avenir, Principessa Aldobrandini and Lady Hume's Blush as the finest then in bloom. There were numbers of sorts with striped and flaked petals; but as I am not an admirer of such bizarre flowers, I did not stop to take their names. The foregoing sorts named are undoubtedly the pick in their respective colors out of a collection numbering some hundreds of sorts: I have no doubt but that the Camellia with you is as much appreciated as here, and certainly there is no finer evergreen shrub for planting out in a green-house for cutting from.

Orchids are here becoming so popular that some amateurs have begun to make specialties of certain genera of the family. The Cyripediums are for the moment the popular favorites, and many growers keep scarcely any other kind, and devote several large houses exclusively to them. Now that its hybrids have become so numerous, an amateur may spend a small fortune in acquiring a full collection of this genus alone. The quaint form of the flowers of all the Lady's Slipper Orchids, their subtle, though quiet coloring, together with their evergreen foliage, which is often very handsomely marked, combine to render them highly popular. I have seen advance proofs of a new illustrated work on the genus Cyripedium, which will be issued shortly by M. Godefroy-Lebeuf, of Argen-teuil, France. The colored plates are splendid examples of the chromo-lithographer's art, and the letter-press is written by Mr. N. E. Brown, of the Royal Herbarium, Kew, who has made a special study of the genus. The text will be rendered in Latin, French and English, so that altogether it will be the finest monograph of Cyripedium that has yet been issued. During the last ten years wonderful strides have been made in hybridizing Orchids, and especially Cyripediums, which seem to lend themselves to the process with exceptional facility; but while there are numbers of really magnificent hybrids, it must also be mentioned that many of them are worthless as ornamental plants, and in not a few instances they are ugly. The wonderful new *C. Rothschildianum*, which Messrs. Sander have quite recently imported, is making a great stir. It is described as eclipsing the handsome *C. Stonei*, but as I have not yet seen it I shall reserve my opinion.

London, April 5th.

Wm. Goldring.

New or Little Known Plants.

Hymenocallis Palmeri.*

THIS second species of *Hymenocallis* from Florida was found by Dr. Palmer in the neighborhood of Biscayan Bay in the extreme southern part of the State. In its general character it is much like the *H. humilis* already

*H. PALMERI, Watson, *Proc. Am. Acad.*, xiv. 301. Bulb small, narrowly oblong, with thick roots; leaves with short sheaths, a foot long by three lines wide or less; scape nearly as high, one-flowered, the segments of the spathe very narrow; perianth white, the tube about equaling the segments, which are three and one-half or four inches long by a line wide; crown fifteen lines deep, acuminate lobed between the erect filaments; anthers greenish; ovary oblong-ovate.

figured, but is taller and larger flowered. The bulb is smaller, with thick roots, and the leaves and slender scape are nearly a foot high. The tube and the very narrow segments of the perianth of the solitary white flower are each three or four inches long, and the border of the deep funnelliform crown is acuminate lobed between the filaments. It was found growing in sandy soil in low grassy bottoms near the beach, blooming in May.

The marshes and river banks of Florida doubtless yet hold many novelties to repay the search of the observant explorer of the plant life of that State. These species of *Hymenocallis*, the *Nymphaea flava* and the *Zephyranthes Treatii* are specimens of what may still be expected. The Orchids also, the Palms, and the Tillandsias of the forests are by no means well known, and it may be said with truth that while exploration there may be attended with its difficulties, there is probably no part of our country that gives better promise of reward in the way of new and interesting species.

S. W.

Plant Notes.

Rocky Mountain Cyripediums.

UNDER *Cyripedium fasciculatum*, in a late number, the general statement was made that "none of these [the eastern species] range as far west as the Rocky Mountains, . . . within the limits of the United States." This was intended to express our present knowledge of the range of the species. In British America the species with a small yellow sac, *C. parviflorum*, extends through the Saskatchewan region to Manitoba and into the mountains. It may possibly enter north-western Montana and have been confounded with the western *C. montanum*, the only very obvious difference between the species being the color of the lip, which cannot always be determined in dried specimens. That region, drained by Clark's Fork, is the extreme eastern limit of the Pacific flora, and *C. montanum* is found there. But *C. parviflorum* has not certainly been found in the mountains south of the boundary, so far as I know. The larger flowered yellow species, *C. pubescens*, is known to occur in north-eastern Colorado, in the valley of the Platte, at least, and probably within the mountains, and this much of exception should have been made to the above statement.

It appears now that a still more decided exception must be made, as a note has just been received from Mr. W. F. Flint, of Winchester, N. H., giving an interesting account of his having found in 1878 a *Cyripedium*, which he took to be *C. parviflorum*, in the Uncompahgre valley in south-western Colorado. This is upon the western side of the Continental Divide, as the waters of the Uncompahgre find their way into the Colorado River. These *Cyripediums* were growing in considerable numbers upon the river bank about a quarter of a mile north of the Los Pinos Agency buildings. Unfortunately, no specimens were preserved, and as the valley is now occupied by white settlers, this particular locality for the plant may be destroyed. But it must occur elsewhere in that region, and it is hoped that specimens will yet come to hand for its more definite determination.

S. W.

Merendera Caucasia, var. *Ruthenica*.—This is one of our newer and most beautiful spring-flowering bulbs, and deserves to be largely grown. It is a native of Transylvania, very hardy and comes very early into flower, blooming, according to climate, from the middle of February to the end of March. The flowers which appear a little before the Squill-like, narrow foliage are of the size of a large Crocus and of a brilliant rosy-crimson-purple color, somewhat like our Meadow-saffron, but deeper and brighter. Good bulbs produce from 4 to 6 flowers, and when grown in clumps or patches on rock-work or in a sunny border they make a charming sight about this tiresome time of year.

Baden-Baden, April 1.

Max Leichtlin.

Cultural Department.

The Gladiolus.

Fig. 25.—*Hymenocallis Palmeri*.

A Hybrid Poplar—*Populus Steiniana*.—Mr. Bornmüller, the Inspector of the Botanic Garden at Belgrade, figures and describes in the last number of the *Gartenflora* a Poplar found by him on the western coast of the Black Sea, near Varna. The young branches are described as hoary when young, afterwards glabrous; buds hoary, petiole compressed; leaves hoary beneath when young, subsequently glabrous, deltoideo-triangular, acuminate, lobed, toothed. The flowers and fruit are not known. The tree is named in honor of Mr. Stein, of the Botanic Garden, Breslau.—*Gardener's Chronicle*.

FEW plants are so easily managed and none will give greater satisfaction in proportion to time, labor and money expended, than the Gladiolus. It dislikes a stiff, clayey soil, but will thrive in almost any other; its preference being for one of a moist, sandy nature, or light loam. For the best results, both in flowers or bulbs, fresh soil—that is, sod ground, with the turf nicely turned under to decay—is most desirable. This should have, after plowing, a surface dressing of well-rotted manure, well harrowed in. In light soil the bulbs should be planted four or five inches deep; in heavy loam two inches of covering will be sufficient.

Successive plantings on the same ground should be avoided, and the locality of the bed should be changed so as not to return to the same spot for at least three years. It is the better plan to make the ground very rich for a desired crop this year and plant Gladiolus on it the next. This plan cannot be well carried out in small gardens, but practice should conform to it as nearly as possible.

The time for planting is the first consideration in Gladiolus culture and its importance is almost wholly overlooked. In spring-time we rush into gardening with the first favorable weather and try to do all our planting at once, but a succession of flowers is what the amateur should aim at. This applies to all plants in the flower

garden, but with more force to the Gladiolus than to almost any other, because the flowers that one bulb will produce are so quickly gone that a succession can only be kept up by repeated plantings. The spring fever in gardening creates a desire to have everything at the earliest possible moment, whether seasonable or not, and early planting of the Gladiolus brings the flowers in the very hot, dry weather of our mid-summer, when in its natural habitat it flowers in the rainy season. For perfect flowers a moist atmosphere is necessary; to that end the bulbs should be planted from the first to the middle of July, and they will then come into flower about the first of October, when the days are cool and the evening air moist. Any given variety coming into flower at that time will give spikes of blooms much larger and stronger and the colors will be far better than if the same are produced in mid-summer. A succession of bloom may be kept up from July until frost by planting every two weeks, commencing as soon as the ground is in a suitable condition to work.

Selection is a matter of taste. As a rule we should grow such as increase moderately fast and are conspicuous for positive colors, well defined markings, and for long well formed spikes. Having secured such a stock, it may be increased to any extent by growing the small bulbs or bulblets that form at the base of the new bulb. These are produced in greater or less quantities on different varieties. Some will average a hundred per year, others scarcely any. The light colors have less vitality, as a rule, than the dark ones, and consequently do not rapidly reproduce. This will in a great measure account for the marked difference in the prices of the named sorts; it will also account

for the rapid increase of the more common varieties and the sudden disappearance of those greatly prized. Choice varieties are usually short lived, and the only way to keep up the stock is by bulblets, while the more common ones will rapidly increase by division. Old bulbs of some of our best named varieties will not produce good flowers, if, indeed, they produce any; this is particularly the case with Shakespeare and Ophir. They invariably give their finest spikes the second or third year from bulblets. Consequently the bulblets of all favorite sorts should be saved and planted each spring,

at least in sufficient quantities to furnish the desired number of flowering bulbs. Should it be necessary to throw away any through fear of over production, always discard the oldest stock.

The question is frequently asked, "Do the varieties sport or return to the original type, or do the white and yellow forms put on the scarlet?" To all such queries the answer must be an emphatic "No." "But then," continues the querist, "how is it that flowers are now all red? The first year or two of my growing them my collection was the best I could obtain, now they are not worth planting." The reason is simple; none but those with the strongest vitality have increased, the others have died.

The bulblets may be sown in early spring in any convenient out-of-the-way place in the garden, if the soil and situation is good, such as would yield a good crop of potatoes; they will, with proper attention, make bulbs that will flower the second season. The first season they will require but little room. Make the drills the same as for beet seed, and about two inches deep; sow the bulblets so thickly that they will touch each other, as they do much better than if sown thinly. No further

Picea Ajanensis, Fischer.—This very beautiful Spruce-fir, which has been introduced into our collections under the name of *P. Alcockiana*, Carr. (*Abies Alcoquiana*, Veitch), thus confounding it with another species, is perhaps second only in ornamental value to the Rocky Mountain *P. pungens*, Engelm. Nearly all of the specimens of so-called *P. Alcockiana* now in cultivation in the United States, are really this species, which may easily be detected by its pale yellowish tinted bark, flattish, very glaucous leaves, twisted at the base on the side branches, and small, or sometimes large, oblong cones with undulated deeply notched scales. It is reported to be a much smaller tree than *P. Alcockiana*, generally growing from 25 to 50 feet high, while the latter attains the height of from 90 to 120 feet.

P. Alcockiana is closely related to *P. obovata*, and *P. Ajanensis* is so nearly allied to *P. Menziesii* of our north-west coast, as to be almost indistinguishable from it in its botanical characters. Indeed, the late Dr. Engelmann considered at one time, that it was a mere form of the latter, but subsequent study enabled him to pronounce it specifically distinct; and Dr. Masters has recorded that it differs from the American species "in its flatter, less deeply keeled, and blunter leaves."



Santa Ritas Foot-hills, with *Quercus oblongifolia*.—See page 142.

work will be necessary, than to keep the ground clean and loose, until it is time to store the bulbs, in the autumn.

There are few pleasures in gardening equal to that which comes from raising *Gladiolus* from seed. The certainty of getting some remarkably fine varieties cannot be questioned; and it is equally certain that there will be some quite the reverse. Upon the whole, when the seed is saved from the best flowers, there will be many new combinations of form and color, and but few plants that need be discarded. The prevailing opinion that it is difficult to raise new and choice varieties from seed is erroneous.

It is no more trouble to raise *Gladiolus* from seed than to raise the most common vegetable. With the simplest garden culture there is an almost absolute certainty of success, if care in the selection of seed has been exercised. Prepare your bed in spring as for any hardy annual; the soil should be made fine and comparatively rich; sow the seed in drills, at a convenient distance apart to be worked with a hoe; cover to the depth of one inch; keep the soil light and clean; take up the bulbs after the first frost; store during the winter in a dry cellar or room, free from frost, but not warm; plant the bulbs again in the spring following, and the next summer very many of them will flower. As a rule, the more choice flowers will be found among the latest to bloom.

C. L. Allen.

In growth, it is rather slow at first in comparison with other species, but after having become fully established its development is rapid and satisfactory. It cannot perhaps be called a very graceful tree, as the arrangement of the branches is somewhat stiff and formal, but the picturesqueness of its habit is much enhanced by the decidedly unique commingling of the dark shining green and silver of its foliage. This peculiarity is noticeable at all times, as the rigidity of the leaves displays the charming glaucousness so characteristic of this species, even when in a state of rest. When standing in a group of other Conifers, especially those with dark tinted foliage, the contrast is exceedingly striking and rich. Its hardiness in the Northern States, even when small, is unquestioned, and although it requires a deep rich alluvial soil to accelerate growth and develop its beauty, it will succeed in almost any situation where other Spruces will thrive. *Fosiah Hoopes.*

Psychotria jasminiflora, or, as it is more commonly known in gardens, *Gloneria jasminiflora*, is a beautiful Brazilian shrub, with handsome evergreen foliage and pure white, fragrant, tubular flowers, produced in terminal corymbose panicles. It was discovered by Libon in the province of St. Catharine, in southern Brazil, as long ago as 1860, and is very well figured in the *Botanical Magazine*, t. 6454. It is not a difficult plant to

cultivate, and thrives and flowers freely during February and March in a warm green-house or stove, if potted in a compost of fibrous peat, leaf mould and silver sand, and grown on rapidly in summer in heat and abundant moisture. Like many other beautiful winter blooming stove-plants, it is too rarely seen in American collections. A fine specimen was shown by Mr. Hunnewell at the recent exhibition of the Massachusetts Horticultural Society.

Rhododendron Dauricum sempervirens is the earliest of all the *Rhododendrons* in flower. It is an erect, very hardy shrub, with small evergreen leaves and rose-colored flowers, single, or in twos and threes, on the end of the branches. In ordinary seasons it flowers in New England early in April, often before the snow has disappeared. S.

Tulipa Kesselringii was the earliest of the Tulips in flower in the New England rock-garden, where it was blooming freely during the last days of April. This is a dwarf and very hardy species, discovered a few years ago in Turkestan by Dr. Albert Regel, and distributed from the St. Petersburg Garden. The leaves are glaucous, lance-strap shaped, about six inches long, and crowded at the base of the stem. The flower-stem is short, four to eight inches long, and bears a bright, clear yellow flower, one and one-half to two inches long, the outer segments at first slightly flushed with red and green on the back. It is a very handsome and desirable species, recalling in habit and in the color of the flowers the Greek Tulip (*T. Orphanidea*), although belonging to a quite distinct group of the genus. *Tulipa Kesselringii* appears in some garden catalogues as *T. Hoeltzeri*. It will thrive in any good, well-drained garden soil.

Primula rosea, protected in a cold-frame, is in full bloom on the 1st of May. This is one of the loveliest of all the *Primulas*, and deserves a place in every garden where spring flowers are cultivated. It is a dwarf, compact Alpine plant, with tufted leaves, only a few inches high, and intensely brilliant colored rosy-pink flowers, nearly an inch across and with a conspicuous yellow eye. The stout, low flower stems are four to ten flowered. *Primula rosea* is a native of the snowy ravines of the western Himalayas, Kashnir and Afghanistan, where it is found at an elevation of ten to twelve thousand feet above the sea. Its hardiness has not yet been established here, but it is well worth the protection of a frame in winter, from which it can be transplanted in April to flower in the rock-garden or in the open border. It would not be easy to find among early flowering hardy plants a more striking and beautiful object than a mass of this Primrose.

Primula cortusoides, in its Japanese form known as var. *amana*, and sometimes as var. *Sieboldii*, is perfectly hardy here, and although not yet in flower, is now pushing up its crown of leaves vigorously. It is a handsome plant with ovate, cordate, dark green leaves, with many lobed margins, tall, slender scapes, and mauve or lilac colored flowers. It is often cultivated and much prized by the Japanese.

The Bloodroot (*Sanguinaria Canadensis*), a native of our northern woods and an excellent rock-plant in cultivation, is also in bloom now. The pure white, star-shaped, handsome, solitary flowers appear before the leaves, which are large, rounded and palmately lobed, and make an attractive and conspicuous mass of green throughout the summer.

Boston, May 1st.

C.

Streptosolen Jamesoni.—This plant deserves all that "W. F." says about it (page 33), but the fault that gardeners find with it here is its somewhat straggling habit of growth. But perhaps we grow it here in too high a temperature. A cooler treatment would probably induce a more compact growth. I have never seen it so fine as when Cannell of Swanley showed it a few years ago for the first time. Though an old plant with several of those who were at the show, the profusely flowered specimens, brilliant like balls of fire, took many by surprise. I think "W. F.'s" treatment in plunging out-of-doors in summer is the secret of success.

Aquilegia longissima, the new Columbine that Mr. Sereno Watson describes at page 31, may be a fine plant, but from the description I imagine that it is too much like the common yellow *A. chrysantha*. *A. Skinneri* is no good out-of-doors with us here, beautiful though it be. *A. Canadensis* is the best red Columbine for borders, but it is a trouble to keep it pure. So readily does it hybridize with *A. chrysantha* and our common *A. vulgaris*, that if seedlings are raised and they come up self-sown everywhere they are sure to be hybrids if the three kinds grow within reasonable distance of each other. You probably

have the race of beautiful hybrid Columbines that Mr. Douglas, one of our most noted gardeners, raised a few years ago. He said he intercrossed *A. corulea*, *A. chrysantha*, *A. Canadensis* and others, the result being a charming race of varieties with large, long-spurred flowers of every shade of tint possible to find in *Aquilegias*. They have now found their way into most good gardens, and being hardy and giving no trouble to grow well, they are favorites.

Parry's Lily.—That note from Mr. Pringle concerning the habitat of *Lilium Parryi* is most valuable, as it gives us just the information we wanted as regards the conditions best suited to this lovely Lily under culture. Hitherto it has been considered rather a delicate kind, but during the last two or three seasons some growers have apparently hit upon the treatment the plant likes, and the finest specimens I saw of it last summer were growing in a damp spot in peaty soil, in such a place as Mr. Pringle says it grows wild. Like *L. Canadense*, *L. pardalinum* and other of your native Lilies, I think that *L. Parryi* needs moist treatment and partial shade such as that afforded by a thin wood.

Narcissus in Water.—The beautiful illustration given on page 44, showing a *Narcissus Polyanthus* in water, is a revelation to most people in England. The majority of those to whom I showed the picture were unaware that *Narcissus Polyanthus* could be grown so finely in water, and no doubt the experiment will be tried before long by not a few. It is by bringing these somewhat out-of-the-way methods of flower-culture into notice by good illustrations that the best interests of progressive gardening are served.

W. Goldring.

The Forest.

The Forest Vegetation of North Mexico.—IV.

TO come now to the dry mountain ranges which rise at intervals from the plains to an elevation of 6,000 to 8,000 feet, between the Sierra Madre, which is the eastern verge of the plateau, far more favored as respects rain-fall, and comparatively rich in the number of its arborescent species, and the other Sierra Madre, or Cordilleras, of the western verge, we find *Pinus Chihuahuana*, *Engelm.*, pre-eminent in value among their sparse and stunted growths. In that fringe of the forests of the Cordilleras, which spreads out for a few miles upon the plains at their eastern base, I have seen this species developed into a noble tree, three feet or more in diameter, and sixty or seventy feet in height; but on these mountains its diameter is commonly less than twelve or fifteen inches, and its height less than forty feet. Of slow growth here, and showing more or less of dead branches or their stumps, with its sooty bark and its burden of old persisting cones, its aspect is unthrifty and melancholy.

To the building of Chihuahua, and other towns and villages, and the scattered homes of rich and poor throughout that region, this Pine must have contributed largely. The small amount of wood used in the construction of a Mexican house is astonishing to an American; yet none but cliff dwellings are possible without a little wood. The walls are composed entirely of earth and stone, and the floor may be of earth or tiles; but for the few doors and windows a little sawed lumber must be had; and, to support the heavy covering of earth, straight and strong timbers about eight inches in diameter (vegás) are indispensable, though they must be brought on the backs of mules and donkeys from mountains 50 or 100 miles distant. Just such timbers, straight, strong, and light for transportation, when disbarbed and seasoned, this Pine supplies; and there is hardly a mountain crest or slope to which the *peon* and his donkey could climb, that has not been searched to procure the vast number required. For the other lumber needed the trunks of the larger specimens in cañons have been sawed in the mountains with whipsaws.

Juniperus occidentalis, *Hook.*, var. *conjungens*, *Engelm.*, Juniper, is a common species of these ranges, and ranks next to the last in importance among their non-deciduous species. With a diameter of eight or ten inches in its

best development on the broader summits or in cañons, it supplies timbers for supports in mines, which well resist decay.

By far the most abundant trees, however, are Oaks, represented by two species, *Quercus Emoryi*, Torr., and *Quercus grisea*, Leibm., both evergreen, the former predominating about the base and in the lower cañons, the latter on the drier slopes and summits. Growing where they find more room and light than moisture, they branch low and form broad heads, and make very meagre annual growths. Old age overtakes them by the time they have reached a diameter of twelve or sixteen inches, and the axeman usually finds them hollow and defective. Their wood is brittle, knotty and contorted, of little value except as fuel, of which it supplies by far the larger part used in the country. Cut into short lengths, and split if large, it is bound by ropes to the backs of donkeys, a good wheelbarrow load on either side, and thus carried from mountain heights and steep to ox-carts at the base, or more often quite to the distant town.

Quercus oblongifolia, Torr., a species similar in character and quality to *Q. grisea*, is, so far as I have explored, comparatively scarce. (See illustration, page 140.) I suspect its range is mainly on the Pacific slope, with its centre of distribution in southern Arizona or Sonora; while *Q. grisea* is of most extensive distribution—from southern Colorado southward as far, certainly, as the State of Michoacan.

Quercus undulata, Torr., var. *breviloba*, Engelm., also resembling *Q. grisea*, seems to be a smaller tree than that, to be less common, and to grow on lower hills.

Quercus undulata, Torr., var. *pungens*, Engelm., is but a shrub forming thickets in cañons.

The ash, *Fraxinus cuspidata*, Torr., usually considered a frutescent species, I have seen in deep cañons attaining arborescent dimensions—a diameter of six or eight inches and height of twenty feet. On account of its large panicles of white flowers and their exquisite, pervading fragrance, it is worthy of being brought into cultivation wherever practicable.

A few other arborescent species occur on those ranges visited by me, but as they are stragglers merely from other districts this is not the place to describe them.

C. G. Pringle.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Let me add to your lists of Rhododendrons the names of the varieties that have proved hardy on Long Island. Album, Album elegans, Album grandiflorum, Bicolor, Blandum, Caracacus, Charles Bagley, Charles Dickens, Cælestinum, Candidissimum, Everestianum, Gloriosum (Parsons), Grandiflorum, Glennyannum, H. W. Sargent, Lady Armstrong, Lee's Pallida, Mrs. Milner, Perspicuum, Purpureum elegans, Purpureum grandiflorum, Speciosum, Roseum elegans, Roseum superbum.

The following are American seedlings: Abraham Lincoln, Aurora, Bertie Parsons, Dr. Torrey, Flushing, General Grant, Henry Probasco, Maximum superbum, Purpureum crispum, Roseum luteum.

There are others, like Blandyanum, which do well only when protected from the north and west wind, and others which are still on trial. The American seedlings are exceptionally hardy; it would be useless to speculate upon the cause.

It is difficult to understand why certain varieties should be hardy in Boston and not here and why the converse also prevails, unless one knows the environment, and the shelter, not of covering, but of adjacent plantations. Then too the manner of growing has much to do with it. Those grown in peat except in wet places have not the vigor which will endure cold. Mulching may modify the injury, but in the dry weather of American summers peat is very injurious. Our own garden soil is light loam and during thirty years we have found this the best. After full trial we have avoided peat as we would noxious insects.

While thus asserting that good free garden soil is the best adapted to the Rhododendron, and while always striving to give our plantations open exposure, I readily admit that on the borders of ponds or in heavy adhesive clay, peat or sand ma-

be useful. I would not, however, place them in such positions while I recollect that the native habitat of the Rhododendron is less in valleys than on the sides of hills and mountains.

Your remark that a limestone soil is injurious is doubtless true, but that should never be an obstacle to their culture when leaf mould or other good material is easily obtained.

The sorts we mention doubtless owe their immunity to the fact of their being grafted plants as well as being grown without peat. Propagation by layers is still practiced in Europe, where old methods are persistently adhered to, but if we examine carefully the cause of the weakness of the layer will be manifest. A layer is put in the ground, slowly forms a callus, then slowly throws out its feeble rootlets, and, after long and severe efforts, makes a root ball which will go in a tumbler. In grafting, a scion is put upon a vigorous stock of *R. Ponticum* and then grows into vigorous life with a far better root-support than the best *R. Catawbiense* can give and which will fill a half peck measure before the layer root will fill the tumbler.

Layers also sprout in several branches from the ground and may be useful for thickets. In grafted plants the whole strength springs into one central shoot. One advantage of grafting them is that we may use the more vigorous root and open bark of *R. Ponticum* as a stock. A stock of *R. Catawbiense* or *R. Maximum* would be outgrown by the scion.

The weaker the constitution of a variety, the more difficult it is to make it thrive on its own roots; it requires the support of a stronger stock. Even strong varieties are improved by being grafted. This is illustrated by General Grant, which originally had very small trusses, while plants grafted from it have good sized ones.

Properly prepared, the stock of *R. Ponticum* rarely suckers with us. If it did we should not be deterred from grafting any more than the grower of Pear trees is deterred from grafting or budding because Pear stocks will sucker.

The preceding remarks apply also to the Ghent Azalea. Twenty-five years ago we had *Azalea coccinea* from layers and cuttings. In that time they have never grown over 1½ foot high and always flowered poorly, while the plants grafted from them made in five or six years more than the same height of healthy wood.

In 1873 we received from Belgium 3,000 Azaleas in 300 varieties; the grafted plants alone proved good; the layered plants were worthless and dwindled away. The same experience and rule applies to Magnolias, Camellias and Chinese Azaleas.

Many years ago and after repeated experiments we came to the conclusion that for this country layering was the worst mode of propagation that could be adopted. Subsequent experience after grafting over 200,000 Rhododendrons and proportionate quantities of other plants has thoroughly confirmed us and we now rarely use layering for any plant.

Flushing, N. Y.

Sam'l B. Parsons.

[We have never seen Rhododendrons successfully grown on a limestone soil, but have known of many failures where the utmost care was exercised and every expedient to overcome its deleterious effects tried. That peat is injurious in a Rhododendron bed is contrary to general experience.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—I was glad to see the article in your issue of April 18th calling attention to the success of the Japanese in landscape gardening. The subject is of extreme interest to all who care for art in connection with gardening, and I trust that some day you will be able to treat it more extensively and accurately than has yet been done by any European writer. Meanwhile perhaps the following extract from a German book—Reinhold's "*Japan und die Japanesen*"—may be welcomed by your readers.

"I do not know any other nation which has such a love for nature and its beauties as the Japanese. Scarcely a house is to be seen without a garden, in the laying out and keeping up of which no pains are spared. But as in most cases the space for gardens is very limited in the cities, the Japanese take great delight in miniature creations which, however, are very different from those one finds in China. The Chinaman's taste runs to the unnatural. His plastic representations are not copies, but caricatures of nature, and to our ideas are most repulsive. He lavishes time, money and labor on such constructions and finds satisfaction in having created something that harmonizes as little as possible with nature. His dwarf trees, artificial rocks and miniature landscapes therefore attract our attention to be sure, but not because they are beautiful—merely because they are curious. A criterion of their

æsthetic value appears in the fact that we never have the desire to copy or possess them, or even to gaze upon them for any length of time. Quite the contrary is the case with Japanese productions of this kind. Here we see the same dwarf trees, the same imitative groups of rocks, the same grottoes, lakes and landscapes; but even at first sight we are captivated by the fact that we find nature in them all. We are especially surprised by the completeness of the copy. We see that such things could be produced only by the most refined and subtle taste. Not only is nature imitated with painstaking fidelity to her smallest details, but in these artificial creations even her more romantic beauties are portrayed. As in their painting the Japanese labor under the same disadvantage as the Chinese in ignoring the rules of perspective, it astonishes us all the more to see that in their gardens every law of this science is obeyed and that we are unable to discover even the smallest transgression. Occasionally a garden of this sort will scarcely occupy an area of more than thirty or forty square feet, but in itself it is a finished whole which not only satisfies but delights the eye and heart by its faultless beauty. Forgetting that it is a product of art, we are transported to a Lilliputian world such as our childish fancy loved to seek in fairy-tales.

"In consequence of its mountainous surface Japan is very rich in the beauties of nature, and the variety of its flora increases them in no small degree. The hedges and bushes are brilliant with Camellias and Azaleas; tree-like Rhododendrons cover the hill-sides; the feathery leaves of the Bamboo wave in the wind alongside of the wide-spreading branches of the sacred Fir-tree; and by the dark Japanese Palms (*Rhapis*, *Chamærops*, *Cycas*) glow the red leaves of the Maple or the rich greens of the Waxtree (?). Wherever there is a beautiful view we may count with certainty upon finding a convent, a temple or a tea-house. They prove, however, that a Japanese resorts to miniature creations only when he is obliged to forego nature herself. Wherever she surrounds him he can enjoy her without constraint. There he neither imitates her features nor strives to force them into other shapes, but is quite satisfied with her natural aspect. Therefore we never find artificial gardens or parks where nature has created their like."

It need only be added, as was remarked in your article already referred to, that although when nature is beautiful the Japanese does not resort to artificial arrangements of any kind, he nevertheless always tries to develop nature's intentions to the full, to remove all discordant details, and to heighten by gentle care the native character of the spot. So beautifully and unobtrusively is this done, that the eye of the tourist may well be deceived into thinking that man has done nothing, where in fact he is daily doing much. E. G. G.

To the Editor of GARDEN AND FOREST :

Sir.—Can you inform me why it is that horses and cattle can eat with impunity the shoots and leaves of the "Poison Ivy"? It is a well known fact that they are particularly fond of this plant.

Tiverton, R. I.

Nanequacut.

[It is not at all uncommon for animals to eat with impunity some vegetable poisons which are fatal to man, as there are some animal poisons fatal to cattle and not injurious to man. No instance is recorded of the poisonous action of *Rhus* upon the lower animals, at least among Mammalia. Dr. Bigelow refers to an account of bees being killed by swarming upon *R. venenata*, and it is stated that insects never attack the Japanese Varnish-tree. References to this immunity of the lower animals will be found in Professor James C. White's recent publication upon the action of external irritants upon the skin. What is more strange is the complete immunity of many individuals of mankind from the action of all the poisonous species of *Rhus*, who can chew the plants and rub them upon the skin without the slightest irritative effect, whilst the mere passage along a road bordered by the plants is sufficient to provoke a severe inflammation of the skin in others.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Allow me to take exception to Mr. Dana's wholesale condemnation of the Norway Spruce, in his pleasant letter on Conifers. It is indeed a somewhat stiff and prudish tree, and has been doubtless over-planted in the way of making decorative

green tufts about too many homesteads. But in fullness of age, when it shows a great array of fleecy, pendent branchlets, and of tawny cones, it has a majesty of its own. Moreover, scarce one of our native Conifers, when mature, keeps such vigor in its lower limbs; thus insuring, for single planting, a pyramidal piling up from the very turf of a tower of evergreen. Our black and white Spruces, our Balsams, our Pines (the Scotch Pine even more noticeably), are apt to show a beggarly array of lower limbs, and to put all their forces into the tops, when they come to fruiting age. Again, the Norway Spruce takes the shears very kindly for hedge purposes, or for screens; its dwarf varieties are particularly amenable to the moulding clips of any gardener or householder who may have topiary whims to indulge. But most of all is this old favorite to be commended, I think, for its hardiness—its sturdiness—and its every-day farm utilities. It will bear rough handling; is easy of removal; it stands drought; it makes the quickest and best of wind shelters; its insect deprecators are of the fewest; it does not break down under press of ice or snow, as the White Pine and Hemlock are somewhat prone to do.

Edgewood, Conn.

Donald G. Mitchell.

[The trouble is that the Norway Spruce in this country rarely if ever reaches "fullness of age" in a healthy condition.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Professor Penhallow's notes on the Snowberry and its relationship and resemblance in flavor to the Gaultheria reminds me to say that I have known the berries of Gaultheria used in the same way as a conserve. In the southern counties of the Maryland and Delaware peninsula the Gaultheria is very abundant in the black, swampy spots called "savannahs," and the berries are largely sold under their Indian name, "Yopon."

Crozet, Va.

W. F. Massey.

Recent Publications.

C. F. HOLDER'S *Living Lights, A Popular Account of Phosphorescent Animals and Vegetables* (Chas. Scribner's Sons, New York), is chiefly taken up with an account of the animals in which light-producing phenomena have been observed, such phenomena being more frequent and more conspicuous in the animal than in the vegetable world. But two chapters are devoted to luminous fungi and to plants and flowers which, at least under certain conditions, have been seen to emit light. As long ago as 1762 the daughter of Linnæus observed, during a twilight hour, a "lightning-like phosphorescence" about the flowers of the Nasturtium, and stated also that when she approached the flowers of the White Dictamnus with a light "they appeared to ignite, without, however, injury to them." Many scientific men at that time threw doubt or ridicule upon her statements, but they have since been confirmed by hundreds of observers, and, as a correspondent of GARDEN AND FOREST recently set forth, the inflammable nature of the emanations from *Dictamnus Fraxinella* is well known to-day. Not only the Nasturtium, but the Poppy, the Sunflower, the Garden Marigold, the Orange Lily (*L. bulbiferum*) and the French and African Marigolds (*Tagetes patula* and *T. erecta*) have been seen to emit flashes which have "the exact appearance of summer lightning in miniature," and are probably, in fact, electrical in their nature. The nature of the phosphorescence so frequently observed in decaying wood and also in many fungous growths produced in caves and mines has never, according to Mr. Holden, been accurately determined. But the flame which is emitted when *Dictamnus* is brought into contact with a light, has nothing electrical and nothing inexplicable about it. Dr. Hahn wrote in 1857 that he "held a lighted match close to an open flower [of the White Dictamnus], but without result; in bringing, however, the match close to some other blossoms, it approached a nearly faded one, and suddenly was seen a reddish, crackling, strongly shooting flame, which left a powerful aromatic smell, and did not injure the peduncle. Since then I have repeated the experiment during several seasons; and even during cold, wet summers it always succeeded, thus clearly proving that it is not influenced by the state of the weather. In doing so, I observed the following results which fully explain the phenomenon. On the pedicels and peduncles are a number of minute reddish-brown glands, secreting etheric oil. These glands are but little developed when the flowers begin to open, and they are fully grown shortly after the blossoms begin to fade, shriveling up when the fruit begins to form. For this reason the experiment can succeed only at a limited period when the flowers are fading.

The radius is uninjured, being too green to take fire, and because the flame runs along almost as quick as lightning, becoming extinguished at the top, and diffusing a powerful incense-like smell." At the close of a hot, dry day the oil is, of course, drawn from these glands in larger quantities than at other times, and then we may count upon the possibility of igniting it in the atmosphere, even though the match be held at some distance above the plant.

Bulletin of Miscellaneous Information. Royal Gardens, Kew. No. 15. March, 1888. Eyre & Spottiswoode, London. Two-pence a Number.

The object of this useful publication is to bring within reach of every one interested in plants, in a cheap and accessible form, the mass of valuable information which is always accumulating in the Kew establishment.

The last number contains an article on *Forsteronia* Rubber, the product of *Forsteronia gracilis* of British Guiana, "a large twining plant, the stem of which trails on the floor of the forest, snake-like, and the head spreads over the tops of the highest trees above." The good quality of the samples of rubber yielded by this plant indicates that it would be a promising commercial undertaking to collect it if the plant is found in sufficient quantities. Another article is on Patchouli, a well-known Eastern scent distilled from the leaves of *Pogostemon Patchouli*, and familiar as the odor connected with India shawls. The Patchouli plant is a native of the East Indian Islands, where the leaves form a considerable article of commerce. The present number contains also articles on west African Indigo plants; on the Vanilla, and the advantages of undertaking its extensive cultivation in the West Indies and other tropical countries where this Orchid is not indigenous. Directions for its cultivation and minute instructions for artificial fertilization of the flowers (illustrated), an operation which will always be necessary in countries where the peculiar insect which deposits the pollen upon the stigma of the Vanilla flower is not found, add to the value of this article. There are articles on *Streblus* paper, made in Siam from the bark of *Streblus asper*, a tree widely distributed through India, Ceylon and tropical Asia, and closely related to the well-known Paper Mulberry; and on *Usera* Fibre, the product of a Natal plant (*Usera tenax*), and, finally, on various samples of tea grown in Jamaica, in Madagascar, and in Natal, where experiments in tea-growing on a considerable scale are now being made.

Public Works.

Historic trees and shrubs for Central Park.—More than twenty years ago Mr. James Hogg began to plant in his grounds at Eighty-fourth Street and the East River the novelties which his brother Thomas Hogg was then sending from Japan. At one time there were collected here more than 300 species and varieties of trees, shrubs and herbaceous plants, mostly from Japan and China. Most of these were the first specimens of their kind to reach this country and many of them were received here some time before their introduction into Europe. Some years ago Mr. Hogg disposed of the place, and the trees and shrubs have been somewhat neglected, and yet the collection has continued to be a most interesting one. But the time has come when the space must be covered with buildings and through the efforts of Mr. Hogg the trees and shrubs were presented to the New York Park Department and most of them have been carefully removed to the north-eastern part of Central Park, where extensive improvements are in progress. Among the trees are fifteen varieties of the Japanese Maple which are specially interesting as first importations. The first *Magnolia hypoleuca* was too large for removal and efforts will be made to protect it where it stands. A Japanese *Styrax* of extraordinary size and a remarkable Tree Peony with large single purple flowers are among the other treasures.

Small Parks for Philadelphia.—A noteworthy meeting was held on Wednesday evening of last week at Association Hall, Philadelphia, under the auspices of the City Parks Association, to aid the movement in favor of creating at once seven small parks in various parts of the city, and ultimately to increase this number to a score at least. Ex-Governor Hoyt presided, and Mr. Herbert Welsh, as Secretary, read a strong memorial, which is to be presented to the Councils. Stirring addresses were made by President Smith, of the Common Council; Charles Emory Smith, of *The Press*; Col. A. K. McClure, of *The Times*; Professor Rothrock, Rev. Dr. M. Connell, Drs. White and Ashhurst, so that all the phases of the question—political, economic, sanitary, social, scientific and moral—

were presented with unusual ability. The objects of the new Association commend themselves to the sympathy and active support of all public-spirited men and women.

Retail Flower Markets.

NEW YORK, May 12th.

The supply of cut flowers is very heavy and the quality is generally poor, particularly that of Hybrid Roses. Paul Neyrons sell at from 40 to 75 cts., and Baroness Rothschilds from 35 to 75 cts. each. It is only in fashionable localities that 75 cts. is charged for a selected Hybrid Rose. On Broadway and Fifth Avenue florists struggle to keep up prices to a reasonable figure, but on side streets good flowers may be bought for nearly half price. The average run of General Jacqueminot Roses may be had for 15 cts. each, but selected ones cost 40 cts. American Beauties range from 20 to 50 cts. They are not as much in favor as General Jacqueminots. Puritans cost from 35 to 40 cts. Moss Roses sell for 50 cts. a spray on Broadway and for 25 cts. a spray on Sixth Avenue. Bride and Catherine Mermet Roses cost \$2 a dozen. La France brings from \$2 to \$4 a dozen. Papa Gontier and Souvenir d'Un Ami cost \$1 a dozen. Perles des Jardin and Niphetos the same, and Bon Silenes from 60 to 75 cts. a dozen, while Mde. Cuisins bring \$1.25 a dozen. Tulips are becoming scarce. They are from out-of-door beds, and the majority of them are spotted—the effects of the blizzard. They cost 75 cts. a dozen, the same as good Lilies-of-the-Valley. Roman Hyacinths have disappeared. Pansies are 25 cts. a dozen, and are extremely handsome. Southern Lilacs are selling for 15 and 20 cts. a spray. Carnations cost 35 cts. a dozen, excepting the Buttercup variety, which brings 50 cts. There are a few Dutch Hyacinths to be had for \$1 a dozen. Gladioluses are 25 cts. a spike. Daffodils cost 75 cts. a dozen, fine Forget-me-nots are 35 cts. a dozen, and Mignonette ranges from 35 to 75 cts. a dozen. There is considerable of the white variety in market, but it does not sell as readily as other sorts. Callas bring \$2, and blooms of *Lilium longiflorum* \$2.50 a dozen. Sweet Alyssum and Auricula are appearing in floral shops. Small clusters of each cost 10 cts. Violets are from 75 cts. to \$1 a hundred, and poor. Smilax is 40 cts. a string, or from 25 to 30 cts. a yard. *Asparagus tenuissimus* brings 75 cts. a string.

PHILADELPHIA, May 12th.

"Spring flowers," which are called for very frequently—more so, perhaps, than anything else, excepting, perhaps, Roses—are nearly all cut from cold-frames or out-of-doors now. Their season will soon be past. The prices keep up surprisingly. Choice Tulips bring \$1 a dozen readily; these are varieties which are too expensive for forcing. The rarer kinds of Trumpet Narcissus, such as Horsefield's, Empress, and occasionally a few flowers of "Grandis," are eagerly bought at \$1 a dozen. They are very beautiful. Tea Roses are not of as good quality as they were ten days or two weeks ago, nor are Jacqueminots and other Hybrid Remontants. American Beauty is the best Rose now offered, and it appears to be the favorite, bringing the highest price—\$5 per dozen. Baroness Rothschild, Magna Charta, Paul Neyron, Mde. Gabriel Luizet and Mrs. John Laing sell at from \$3 to \$5 a dozen. Jacqueminots, \$1.50 to \$3.00; Mermets, Brides and La France, \$2; Perles, Sunsets, Niphetos and Madame Cuisin, \$1 to \$1.50. This last variety is very fine just now, being an exception to the general rule, as it improves with the advancing season, brighter sunshine and warmer weather. Papa Gontiers sell at \$1; Bon Silenes, 75 cts.; Lilies-of-the-Valley, 75 cts. to \$1; Carnations, 35 cts.; Pansies, Marguerites, Forget-me-nots and Heliotropes, 25 cts. a dozen; Mignonette from 25 cts. to 75 cts. Many conservative Philadelphians do not take kindly to *Asparagus*, preferring Smilax, while others are becoming tired of the older kind of green for large decorations. A new vine, differing in appearance from either of those named, which could be grown satisfactorily and cheaply, and that would stand well in heated rooms, would be an acquisition at this time. Something of the kind indicated is on trial at Baltimore, which will be watched with great interest.

BOSTON, May 12th.

There is little change in the cut flower market. Trade in this line is quiet just now, owing possibly to the charms of out-door flowers and shrubbery which the pleasant weather has brought suddenly forward. The auction sales of bedding plants have commenced in earnest, and many people are devoting their attention to the beautifying of their out-door surroundings. Still there is no great over-stock of good flowers in the market, as the crop is light at present on everything, and those who buy the best Roses find that they must pay full prices. There are but few Hybrids now, and the price remains at about \$6 per doz., for selected blooms. Jacqueminots are more abundant and of extra quality; they sell for \$4 per doz. Smilax is still scarce at 50 cts. a string and demand is light. Violets are poor in quality; these and Pansies bring \$1 per hundred; the latter are of extra quality, in fact there is no doubt that Boston takes the lead in Pansy flowers. Pansies and Mignonette have received increased attention for two or three years past and in their greatly improved quality are becoming deservedly popular. Long stemmed Carnations are 50 cts. a dozen for the ordinary kinds. Grace Wilder and Buttercup Carnations always command higher prices than any other; selected blooms of these varieties are worth \$1 per doz. Callas and Lilies are in good supply at \$2 per dozen.

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Rural Improvement Societies.

IT is now some twenty years since the first village Improvement Societies were organized and the history of many of them justifies every reasonable hope in which they were founded. Some were established for a single purpose—as, for example, the laying down of sidewalks or the planting of a public square—and when this end was well accomplished they were formally disbanded. Others entered upon a wider field of usefulness and there is still no abatement of their beneficent activity. Under their influence public spirit has been stimulated and public taste has been cultivated; the health of country communities has been guarded by more wholesome surroundings and country life has been made more satisfying and attractive. Need enough there was and still remains for such organizations, for it is not alone in city sewers and crowded tenements that the seeds of disease are festering. Heaps of offense reek in country hamlets and by rural road-sides; poisoned water pours into country wells and fever-laden gases are generated in village cellars. We cannot hope that much natural beauty will survive under the trampling of a great city's population, but there is no justification for the neglect by rural communities of the natural beauty which appeals to them on every hand, still less can excuse be found for the wanton disfigurement of the native graces of the country by those who should be most concerned in conserving and developing them. The associations which have adhered with intelligence and zeal to the purposes for which they were constituted have accomplished even more than the most hopeful could have anticipated, for their work is seen not only in beautified road-sides, in more general cleanliness and health and in largely increased land values, but in a growing local pride as well, in a more alert intellectual activity and in a more elevated social life.

But there have been failures, too, or at least apparent failures, and these were foredoomed in any community where but comparatively few were interested. A small band of enthusiastic and well-instructed people can accomplish much when they have won the help of their

neighbors, but work of this kind cannot prosper until there is a general co-operation. The effort to overcome inertia and opposition is too costly and wearisome for any but the most courageous and patient. It may be incorrect to characterize the efforts at reform under these depressing conditions as failures, for genuine earnestness in a good cause is never altogether wasted. But in too many instances the zeal of the few has been only superficial, or what is quite as bad, it has been uninstructed; and just here lies the fundamental reason for the most signal failures.

It requires no special skill to keep streets and yards clean and road borders tidy, but it is an art to build a good road, and unless the construction of a highway is planned and supervised by a trained engineer it will probably be impassable when the frost is leaving the ground the next spring. Amateur sanitarians make wild work when devising a system of drainage for a town, as an outbreak of fever is too likely to demonstrate. Amateur tree-planters who place White Pines in heavy, undrained lowlands, and set half hardy and shortlived exotics on bleak and barren knolls, will have a discouraging experience when their cherished trees sicken and die. If the service of an expert is needed for the preparation of a creditable design for the improvement of private grounds, how much more is special training demanded when an entire town is to be treated with a view to the development of its landscape possibilities! It cannot be expected that the private dwellings of a village will all be remodeled into beauty and harmony under the directions of a competent architect, but the advice of such an artist would be invaluable not only in designing the public buildings, but in giving caution and counsel even down to such details as the village fences, the tree guards and the town pump.

All this means that while the love of order, the good taste and the intelligence of many communities will suffice to make a genuine improvement in village homes and their surroundings, the full measure of the possible usefulness of those associations can only be attained when they are directed by counsel of training and experience.

It is true that skillful masters in every department of the work to be undertaken are not always available and it would not be wise for every community to postpone action until their services were secured. But it is prudent in every case where enterprises of this nature are contemplated to move with deliberation and to make a careful study of the entire field before actual work begins. Much can be learned from the experience of other societies. Some of them publish admirable lists of trees for planting. The officers of those that have been most successful in this direction will gladly explain their methods of planting, and subsequent care of the trees, which is of equal importance. The annual reports of the most prosperous are full of information and suggestion on many important matters, including the best methods of raising funds and of enlisting the co-operation of the town authorities. We learn from one of the interesting letters we have been receiving from the Secretaries of various societies, that a movement has been started to form a New England Association of Village Improvement Societies. The discussions at an annual convention of delegates from all the local organizations throughout the Eastern States could not fail to be helpful.

With all these opportunities for instruction, it may be hoped that new associations will be able to avoid certain errors into which the pioneers in this movement were naturally led. And yet the counsel of a trained landscape gardener would be invaluable in every large enterprise, even when the most is made of all the means of instruction that have been named. To the objection that such counsel is expensive, the general reply may be made that the best is always the cheapest. And more specifically it may be said that when any considerable outlay is to be made, much more and much better work will be accomplished when a fair percentage of money expended is paid for the best advice that can be obtained.

Labels.

A THOROUGHLY satisfactory label for a plant has not been invented; and yet a good label is one of the most important elements of a good garden. It should be indestructible, cheap and unobtrusive, and it should be made of a material upon which ordinary writing will be durable and legible. The labor involved in naming and in preserving the names of a large collection of plants is so great that experiments are constantly made with different materials, in the hope that something may be found that may answer all the requirements of a good label, at once cheap and durable. The results of many such experiments have been presented in a most interesting and instructive paper, lately read before the Massachusetts Horticultural Society by Mr. Robert T. Jackson, of Boston.

Metal labels are more durable than wooden ones; and zinc, Mr. Jackson finds, is the metal most commonly used, as it is cheap and reasonably durable. Bright, fresh zinc, first cleaned for the purpose with very weak muriatic acid, may be written on with an aqueous solution of chloride of platinum or chloride of copper. These solutions can now be purchased from dealers in seeds and garden supplies; and a quill pen is the best thing to use for writing with them. Labels thus prepared need no further attention. Zinc slightly roughened by oxidation, which is easily produced by leaving it for a few weeks in a damp place, may also be written on with a soft lead pencil. The writing soon becomes indelibly fixed on the zinc, and is as permanent as if the chemical ink had been used. Labels prepared in this way are known to have been legible ten years after they were written, and are, Mr. Jackson considers, about the most satisfactory to use out-of-doors.

Iron, or tinned iron, painted a neutral tint and lettered, is also used sometimes for labeling large trees, but copper, chemically one of the most stable metals, would no doubt make a better label, the names being written on it with a white or light-colored paint. On smaller copper labels, names, as Mr. Jackson suggests, "could be very easily and rapidly marked by an etching process as follows: Heat a sheet of copper, rub over with etcher's wax, and when cool, write the names with a steel point, laying bare the copper on the lines of the writing, expose to nitric acid and water—equal parts—for a few minutes, clean off the wax with turpentine, and cut up the copper into suitable-sized labels." Pure tin—not the tinned iron usually known as tin—is recommended for labels to be used in a warm green-house temperature, where other metals are subject to extreme corrosion. Names or numbers can be easily stamped with common steel dies into any of these metals, and stamped labels are more permanent than written ones. And even when it is desirable to write the name on a metal label, a supplementary number corresponding to a number in a written record of the collection adds immensely to its value. A narrow strip of lead stamped with a name or with a number and wound about the stem of a plant is used in many European establishments, and makes a permanent label, although it has to be taken off the plant to be read. Different styles of pottery labels have been tried, but they break easily, and the careless blow of a spade will finish the best of them. White porcelain labels, with the letters burned in, and set in iron frames, are neat and indestructible, and perhaps the best which have yet been devised. They are far too expensive, however, for general use. Mr. Jackson calls attention to a white composition label, in use in the Botanic Garden at Geneva, which can be written on with a pencil or with indelible ink, but this would probably prove almost as brittle and easily broken as pottery.

Wood is more generally used, however, in this country, for labels, and probably always will be. Well-selected white pine labels, soaked in linseed oil, will last for a number of years, and white pine is probably the cheapest wood of its durability which can be obtained for this purpose. California redwood is very durable, and not

now very expensive. It holds paint well, and makes an admirable label, and so do the wood of the Southern Cypress and the Catalpa. The last, however, is not commonly found in the market. Locust makes a very strong and durable label, but it is expensive and its surface is coarse for lettering. Labels made of pine, or of other not very durable woods, when used in the ground should have the lower portion carefully coated with tar. A pine stake so prepared, and then painted with two coats of good paint before being lettered, will last for eight or ten years. It is a rule, which, so far as possible, should never be deviated from, that the label should be securely attached to the plant itself. It is easy to do this in the case of trees and shrubs, but with annual, bulbous and herbaceous perennial plants the label must be placed in the ground near the plant. There is always danger that such labels may be lost or misplaced. The record, therefore, in regard to such plants, is much more difficult to preserve than in the case of trees and shrubs. A metal label with the name and a number plainly stamped into it, and securely attached to a branch with a piece of good strong copper wire is the best record which has been devised, and such a label should be placed on trees and shrubs whenever it is important or desirable to keep a record of their history, even when they are labeled in a more conspicuous manner for the benefit of the public. It must be borne in mind, however, that labels attached to branches or the stems of small trees should be examined every year, and the wire loosened whenever the growth of the plant causes it to bind the bark. Many plants are ruined from neglect to attend to this precaution. This is the great danger, and the only drawback to labels fastened in this manner.

The best label for a large tree, when it is desirable to instruct the public by this means, is a piece of cold rolled copper, twelve inches long by eight wide. The upper edge should be bent nearly at right angles with the face of the label, to make a narrow hood in order to protect the letters from rain and moisture running down the trunk. The Latin and English names of the tree, and its native country, should be printed in some light neutral tint, and the label should be tacked on the trunk with stout copper tacks, at the height of the human eye.

Trees with trunks too small to carry a label of this description, shrubs, and perennial and annual plants, can be labeled with stout stakes prepared in the manner already explained, and driven into the ground deep enough to resist the heaving influence of the frost. A neater label for such plants, although more expensive, can be made by suspending a small oblong metal or wooden label with copper wire to a slender galvanized iron rod, bent at one end into an eye. The rods should be not less than three-sixteenths of an inch thick, and from eighteen to twenty-four inches long, in order to enable them to have a firm hold on the ground, and to carry the label well up in front of the plant. Such labels, although more expensive, have this great advantage over stake-labels that the writing upon them can be made horizontal to the eye, and therefore much more easily read. They are, moreover, more durable—indeed such labels if carefully made are practically indestructible, and they are less objectionably conspicuous. They should supplement, however, in the case of small trees and shrubs, the small metal label attached to a branch.

The Senate of New York acted wisely and in accordance with the most enlightened sentiment of the State when it defeated the bill authorizing the Forest Commission to lease the public lands under their charge to private individuals. Not to repeat the objections to this measure which have already been presented in these columns, it may be said that the building of many houses and other permanent structures which was invited and encouraged by this bill would go far to rob the North Woods of that wildness which is one of their principal attractions. A fringe of painted villas and fences about an Adirondack lake would certainly add nothing to its charm.

Roadside Beauty.

WHEN this part of the country was first settled a rail fence, half a mile long, was built on the line between two neighbors. This was renewed by pieces and remained the barrier between the two farms for thirty-five years. These men were not representatives of the highest type of snug, thrifty farmers. They were tree slayers and bared their acres of everything that stood in the way of the plow or mowing machine. But along this line fence they stored the stumps and stone and other rubbish that impeded their work, and bushes and young trees soon sprang up. The row of wild growth became a grand place for Raspberries and Blackberries when I was a lad, and the regular harvest of Hazel Nuts came from the same thicket. It was a famous place, too, for rabbits and squirrels, partridges and quails to hide in.

But a new set of landholders came in to revolutionize the neighborhood. A few tree lovers settled here and my father was one. He bought the farm on one side of the line hedge and another progressive farmer bought the adjoining one. A highway was laid out on this half mile of line; the two thrifty farmers cleared out the old fence, burned up and hauled away the rubbish, and with pruning implements weeded out the useless and carefully saved the most promising trees in the greatest possible variety, the different Oaks, the wild Black Cherry, and the Elms predominating. They were left in groups, no effort being made to save trees at regular intervals. These trees grew rapidly, and a fine road-bed was made on either side. It is, to-day, the most beautiful half mile of road in all our county, the pride of every one who loves a tree or appreciates natural beauty.

But the race of vandals is not extinct. Land became valuable and was bought up by speculators who were anxious to cut the acres into small lots and get rich. They wanted to "improve" the neighborhood and "make it attractive." They sought to widen the highway for a mile and a half, including this half mile, and make it into a "boulevard," with a wide road-bed in the centre, a sidewalk on the borders, and rows of trees on either margin, "the way they do in Chicago." I objected mildly, upon the general plea of "no cause." They pressed harder and extolled the beauty and grandeur of a generous boulevard, with every undulation taken out of it, and a grand American Elm on either side once in sixty feet. They pictured the noble residences that would be erected on its borders and the delight with which they would grub out that unsightly, irregular, obstructive row of trees, and have no break in the road-way from end to end. I became impatient, wanting none of their improvements, caring little for a view of fine residences on forty-foot lots, with an ownership of two-thirds of a dead Elm tree planted in front.

Of course I was set down as lacking in public spirit and obstructing intelligent progress.

Surely it is not true progress to lay out every suburban highway on some Metropolitan model and take all the individuality out of a neighborhood. Refined taste does not commend the obliteration of all native and natural beauty, to make room for some formal scheme of an engineer's devising.

We cannot have trees, shrubs and vines on the business streets of a city, and get any satisfaction out of them, but on our highways, in the suburbs, there is no reason why these untamed graces may not only be preserved and protected, but rendered more attractive by delicate attention. This may be small work for a landscape gardener, but it is good work for some kind of an artist, who not only appreciates Nature, but is willing to adopt some of her methods in rendering beautiful the surroundings of homes that have not the advantage of park-like grounds or magnificent distances.

Many of the most attractive highways in our State owe their beauty to the shiftlessness of the pioneers, who allowed a mass of bushes to grow up in the corners of the

old worm fences undisturbed for a generation; afterward to be utilized by their more thrifty successors in the embellishment of the roadsides. No plantations formed by man are equal in beauty to these irregular masses of trees that are of Nature's planting.

Occasionally I note an example of the workings of some man's mathematical mind, who has tried to clear out one of these rows, leaving a tree once in so many feet, and thus ruining the effect for all time. No one can pass along a highway fringed with one of these wild borders without a feeling of gratitude to those easy-going settlers who allowed Nature to do what she could to compensate for man's wholesale destruction of forest beauty, which was a necessary sacrifice, perhaps, to advancing civilization.

We need not be sentimentalists of the kind that refuse to destroy a tree that has passed its usefulness, or that stands as an obstruction in a cultivated field, but we should have a wholesome respect for Nature's attempts to beautify the waste places of the earth, and especially for the way-side shrubbery, which gives attractiveness to the roads we all travel and ought to enjoy.

Grand Rapids, Michigan.

Chas. W. Garfield.

The Two Types of Cemeteries.

AS a matter of design, burial places are of two distinct types of character—the architectural or formal, and the rural or picturesque.

The *Campos Santos* of most Latin countries are instances, though often deplorably poor ones, of the formal type. Most of the larger cemeteries of this country are instances of the rural type.

It must not be thought, because we are most accustomed to the rural cemetery, that it is the only good kind, and that the formally designed place of burial is foreign, antiquated, puerile, and in every way undesirable. The truth is that each type has merits of its own. Both should be had in mind when it is proposed to create a new cemetery, and all the special conditions of the case should be well considered and the decision as to which to adopt should be made according to the balance of advantages.

Cemeteries of the formal type may well be adopted in districts where the soil is too poor, the climate too hot and dry, or too cold and bleak, for the successful growing of trees, shrubs and turf; or where the available area is very limited in proportion to the number of burials to be expected; or, what comes to much the same thing, where the land is excessively costly; or where the tastes, habits, knowledge and skill of the people strongly incline them to work out more artistic results in architecture than in landscape gardening. The architectural or formal style lends itself to the multiplication of large and costly monuments as well as small and modest memorials, each with some individuality, but forming part of a comprehensive design, the scope of which may range from a geometrical, garden-like court, to a great building of the most monumental and dignified character, or from a city block to a great wood with formal alleys and vistas running through it. The principle admits of uniting the highest achievements of architects, sculptors, painters, and other artists, with the most skillful gardening, and the most choice trees and shrubs, into one rich, harmonious and satisfactory whole.

As, however, the fashion of making cemeteries in what is intended to be the rural style has become firmly established in this country, through the existence in parts of it of favorable conditions, a few suggestions as to that style will be of more practical interest than a further discussion of what may be accomplished in the formal style. As one of the results of the increased thought which has, of late years, been given to the high arts and to those of architecture, interior decoration and furnishing, a sentiment has begun to spread among us of dissatisfaction with the appearance of many of our noted rural cemeteries.

If one were to ask, more in particular, the occasions for this dissatisfaction, the complaints would probably be made that the monuments, though costly and made in a sufficiently workmanlike manner, are so generally commonplace and devoid of originality and imagination; that the habitual use of white stone amidst green verdure forms too violent and too frequent contrasts; that the incongruities between the monuments are intensified by their being crowded together while but little attempt is made to screen one from another; that the monuments, their decorations, and their architectural and gardening accessories are so often entirely inappropriate to the purpose in view; and that the necessary and unnecessary artificial objects are multiplied to such an extent as to completely dominate and sometimes even obliterate the natural elements which can alone give any excuse for the use of the term rural as applied to a cemetery.

There is sufficient ground for these complaints to enforce the reflection that whatever is built by man can be designed and executed with due regard to artistic as well as to mechanical principles. There are canons of good taste which should be as well known to landscape gardeners as to architects and other artists, and these, if intelligently applied to rural cemeteries, even though by men whose artistic ability is not the very highest, would secure far better results than those to which we are now accustomed.

J. C. Olmsted.

Foreign Correspondence.

London Letter.

THERE was a fair crop of new and rare plants exhibited at the Royal Horticultural Society's meeting yesterday and thirteen certificates of the first class were awarded. The finest plant at the meeting happened to be an old green-house climber *Bignonia Tweediana*, first introduced to Europe from Buenos Ayres fifty years ago. But it has never been shown in such perfection before, otherwise it would have been awarded a certificate, as it was by a unanimous committee on this occasion. Like most other Bignonias, it is a shrubby climber, having long slender shoots, which (as the specimens showed) become wreathed with a profusion of large showy flowers of a rich warm yellow. They are fully three inches across and remind one of an Allamanda, but is a far more graceful and pleasing plant. It has been commonly grown in England as a stove climber, but now it appears that it wants a green-house temperature in order to flower well. In any case it well repays any amount of attention, if it can be made to bloom freely, as these specimens from Pendell Court.

Another plant of importance was a variegated leaved form of the common *Cordyline indivisa*, erroneously called *Dracæna indivisa*. It has a symmetrical tuft of long, narrow leaves, which, in this novelty, are broadly marked with a whitish yellow band on each margin, giving the plant a pretty effect. A new single Rose, a variety of *R. polyantha* and named *grandiflora*, was certificated because of the profusion of the large white flowers and buds, together with the luxuriant foliage of the plants exhibited, which, of course, had been forced. Those who like single Roses will like this one. It was shown by Paul, of Cheshunt.

A pretty little crested, fronded Selaginella named *S. cuspidata crispa* was next certificated. This is only a few inches high and the fronds are like a feathery moss of a cheerful green. It came from B. S. Williams, who makes a specialty of new Ferns and Selaginellas. He showed also a rare Maidenhair Fern (*Adiantum Ethiopicum elatum*), a tall growing and extremely elegant plant, but as the committee were doubtful about its difference from similar kinds of Maidenhair Fern, it was passed.

The white variety of *Iris stylosa*, which has been placed before the committee at two previous meetings this year, was at length honored with a certificate. The albino is

precisely similar to the typical *I. stylosa*, excepting the absence of color and the fact that its flower season extends over several weeks is, in itself, a great merit in a plant from Algeria that flowers naturally out of doors in our climate.

Among the numerous Amaryllises shown there were few that conformed with the high standard that has been agreed upon among Amaryllis fanciers. The flowers must not only be large, but must show an advance in the direction of perfect form, while the color must be distinct and good. The finest of the five certificated was called Conqueror, which has flowers quite eight inches across, with broad and nearly equal petals of a glowing scarlet, with greenish white centre. The variety Finette is very lovely, as its large and finely formed flowers are pure white, save a few pencilings and splashes of crimson on the sepals. Rodney has flowers of a vivid scarlet, not so fine in size or form as Conqueror, while one called Miss Roberts has white flowers exquisitely netted and veined with heavy lines of deep crimson. The above were all certificated from the group shown by Veitch & Sons. A very fine variety was certificated from B. S. Williams. It is named Emperor Frederick and is remarkable for the very large flowers, not so open as those shown by Veitch, but its rich scarlet color makes it an exceedingly fine variety.

Two new Tree Carnations from Turner, of Slough, were thoroughly worthy of the certificates awarded to them. They were Purple King, with large rosette-like flowers, three inches across, of a rich plum purple, and Mrs. Grenfell, best described as a magnified form of the popular Miss Joliffe, as its large flowers have the same pleasing, delicate, salmon pink color. Both will be invaluable sorts for winter and early spring flowers. From a number of named sorts of Cineraria, all of very dwarf, dense and compact habit shown by James, the committee selected for a certificate one called Maria, which has enormous flowers of pure white with purple centres. Some object to certificating Cinerarias because the sorts do not come true from seed, but the same may be said of most other florists' flowers. James' best named sorts are propagated by cuttings.

Wm. Goldring.

The Banded Hickory Borer.

THIS insect is common, I think, wherever Hickory grows, but it has received comparatively little attention from entomologists. It appears to work more particularly on timber that has been cut, and frequently wood that has lain for a year or two after being felled has been found so full of galleries, that its value, even for firewood, is greatly lessened, while it is rendered entirely worthless for manufacturing purposes of any kind.

In Figures 26 and 27 are shown, reduced one-half, cross and longitudinal sections of a hickory stick, picked out of cord wood from a great number fully as badly eaten. From these sticks were secured a number of the grubs and pupæ, and later, in May, the adult beetles issued, so that its life history can be pretty fully stated. The eggs (Figure 28, a and b) were obtained from the bodies of adult females, as many as ninety-three being found in the body of a single one. Judging from the fact that cord wood and felled timber are so badly infested by the borers, while standing wood appears to be but slightly attacked, it seems that adult insects must select cut timber in which to deposit their eggs.

The young grubs commence channeling the wood at once, but it is not known certainly how long it requires to attain full growth. The cord wood mentioned above as furnishing the adult beetles, had probably not been cut for more than two or three years at the most, and we can safely assume that the eggs in this case were laid after the wood was cut, which would limit their life to two or three years. On the other hand, instances are recorded where the adult beetles have issued from furniture, carriages,

etc., some time after their manufacture. This would indicate a much greater longevity, though the instances are probably exceptional. When full grown the grub is yellow and has the appearance shown in Figure 28 at *c*. It is provided with three pairs of very minute legs, scarcely distinguishable without a lens. At this time it may be found in a burrow in the hard wood, but which has been carried to the surface or at least to the bark. The burrow is an ellipse in a cross section as shown in Figure 26, and in some cases reaches half an inch in its longer diameter, but may extend for three or four inches, running with the grain of the wood. The change from this stage to the chrysalis stage (Figure 28) takes place in the latter part of winter or in spring, occasional ones being found as early as the first of January. The gallery in which the change



Fig. 26.—Cross section of Hickory stick showing galleries of *Chion cinctus*. Diameter, $\times \frac{1}{2}$. (From nature, by H. Osborn.)

to avoid injury. Timber cut in the fall or early winter, and becoming thoroughly dried before the beetles appear in the following summer, will not be so badly attacked, which very likely accounts for the superstition concerning the proper time of the moon in which to cut timber. It is often asserted, also, that if the bark be peeled off no damage will be done. This, although wanting accurate experiment, seems to be well founded. Timber intended for use in the factory, if valuable enough to warrant the expense, could be protected by housing it before the latter part of May, care being taken that windows or other openings in the shed or building, large enough to admit beetles, be protected by means of wire screens.

Herbert Osborn.

New or Little Known Plants.

Delphinium viride.*

THIS Larkspur (Fig. 29, page 150) of the mountains of Chihuahua is a novelty in its combination of colors. We have Larkspurs blue and Larkspurs white, also pink and scarlet, and even occasionally yellow; but here we have the sepals and the long, stout spur of a decidedly yellowish green, while the short petals in the centre are deep purple. The species is probably a biennial or a winter annual, with a rather stout root, and is about two feet high. It was found during the last season by Mr. Pringle on gravelly bluffs along streams at the eastern base of the Sierra Madre. Seeds were secured, and it is hoped that it may be successfully grown. S. H.

Cultural Department.

How to Prepare a Bed for Roses.

THE amateur can grow Roses equal in quality to the fine specimens which are seen on exhibition tables; but to do this there must be no misstep in the cultivation from the very beginning. And at the very beginning must be met the questions, "Where shall we plant and how shall we prepare the soil?"

The bed should be somewhere in a fairly open place, where the plants can have at least 6 or 7 hours of sunshine from April till November. If the shadow of a house or fence falls on the bed three or four hours a day the result will not be fatal, but sunshine all day is to be preferred. Again, the bed must be away from trees; not only from under their shade and drip, but so far away that their roots do not rob the bed of its moisture and fertility. Finally, never plant Roses in an old bed or border where Roses have been growing before perhaps for years. If no other place is available, all the old soil to the depth of two feet should be dug out and carted away and the bed filled in with good fresh soil. This point is of vital importance.

Any good loamy soil, when properly fertilized, will grow Roses. By good loamy soil I mean soil ranging between what gardeners call light sandy loam and heavy clay loam. But where the soil approaches the first limit—that is, where it is of a light, sandy texture, it will be materially helped if some clay or heavy loam is mixed with it. On the other hand, a heavy clay loam will be rendered more porous and better if some sand is thoroughly forked through it.

Of course the bed can be shaped to suit the fancy, but beds star-shaped, or with any other intricate outline, such as we see made for Coleus and Geraniums, are not to be commended. The Roses look better, and can be better cared for, in a circular bed or square block. For a dozen plants a round bed need be no more than four feet six inches in diameter. Nine plants can be placed at equal distances in a circle about 8 or 9 inches from the border, and the remaining three can be placed within this circle at equal distances from each other and from the outer row. A bed eight feet eight inches in diameter will accommodate three dozen plants if they are arranged in three circular rows fifteen inches apart, with seventeen plants in the outer row, twelve in the next, six in the next and one in the centre.

*D. VIRIDE, Watson, Proc. Am. Acad. xxiii, 268. Glaucous and mostly glabrous, 2 feet high; leaves pedately cleft, the segments acutely lobed, the upper leaves more deeply and narrowly divided; flowers rather few, on long pedicels; calyx pubescent, yellowish greens, the sepals 6 lines and the stout spur 10 lines long; petals purple, 3 lines long; capsules pubescent.

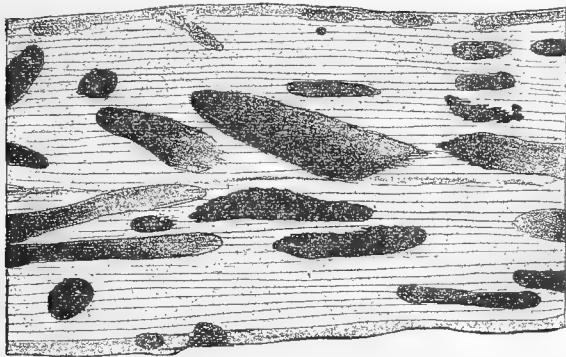


Fig. 27.—Longitudinal section of Hickory stick showing galleries of *Chion cinctus*. Diameter $\times \frac{1}{2}$. (From nature, by H. Osborn.)

takes place is loosely filled with chips, before and behind the chrysalis, so that it is partially protected, while no difficult boring is left for the adult to perform.

The adult beetles (Figure 28, *e*, male; *f*, antennæ of female), for the specimens I reared, issued quite uniformly during the last two weeks of May. These are grayish-brown in color, an inch or more in length, and have commonly a yellowish oblique band on each wing cover. This band, however, is often wanting. The front part of the body is cylindrical with a sharp spine at each side, and there are two spines at the end of each wing. The antennæ of the males are more than twice the length of the body, while those of the female are only about the

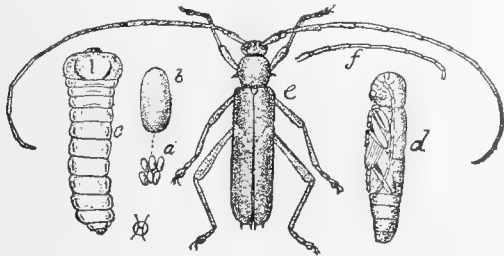


Fig. 28.—*Chion cinctus*.—Drury. *a*, eggs, natural size, *b*, enlarged; *c*, larva, full grown; *d*, pupa, side view; *e*, adult male; *f*, antenna of female. (From nature, by H. Osborn.)

length of the body. It is evident that any measures designed to protect the timber must be adapted to the time and method of egg deposition, since it is utterly useless to attempt the destruction of the grubs after they have become established in their burrows. Growing timber is so slightly affected, that its protection is not necessary; but timber intended for manufacturing purposes, and even for firewood, unless used the first year after felling, must be protected

When the beds are cut on the turf the border should be marked sharply, and a strip of sod cut out clean with a spade. The soil should be then taken off to the depth of 10 or 12 inches and laid on the outside of the bed. The subsoil should next be covered to the depth of three or four inches with well rotted stable manure, which should be forked in and mixed thoroughly to the depth of another foot. The top soil can then be thrown back, covered with another good coat of manure and carefully forked over. In case the subsoil should be found light or gravelly, it should all be carted away. The bottom should then be dug up loosely, and the top soil originally removed should be thrown in and manured as above. The bed should then be filled up with soil from an old pasture, using enough to raise the centre of the bed some three inches above the level of the margin. This should then be manured and forked. This will give a bed of fresh, healthy, active soil, and without this it is impossible to grow the finest Roses. It should be added that thorough drainage is another essential, for Roses will no more thrive in a water-soaked soil than in an unmanured bed of sand or gravel. This work is to lay the foundation of a bed that is to last for years, and it pays to do it well. Indeed, it is time and money wasted to do it in any other way. All subsequent fertilizing is to be applied to the surface. The bottom must be made once for all.

What Roses to plant in such a bed, and how to plant them, must be the subject of another article.

Summit, N. J.

John N. May.

Hardy Plants for Forcing.

THE first spring flower in our woods gives unusual pleasure, but it is quite as pleasing to see those vernal favorites among our green-house plants. Delicate and unassuming as they are, they will attract more attention than more showy exotics. These latter everyone expects to see, but the sight of a wild Columbine any time after Christmas always brings an exclamation of delight. Many of these hardy plants force readily in a cool green-house, and generally remain longer in beauty than when they flower at their normal season. Strong specimens should be selected to be potted in not too large pots in September or October, and plunged in a cold-frame with such plants as Violets. From the first of January, by which time they will be well rooted, they may be brought into the green-house, where they will flower within a period of from three to six weeks. After the flowering is over, and the ground open, they should be planted out again, and, if possible, new stock used for the next winter, to give them time to get well established before they are again used. It must be remembered that the majority of such plants do not require higher temperature than 50° by artificial heat, as the sun in reality does more towards the forcing than the heat. A liberal supply of fresh air should be maintained to prevent damping off, and to keep away the green-fly, which is apt to infest them in closed houses.

Doronicum Caucasianum is well fitted for forcing, and needs but three or four weeks to expand its blooms, which are of deep yellow and over two inches in diameter. This makes an excellent pot plant for decoration, and the long-stemmed flower could be used for cutting. It is a native of the Caucasus. Similar to this is *D. Austriacum* and *D. macrophyllum*. Care should be taken that the plant is not kept too wet, as it decays easily.

Trillium grandiflorum, a beautiful native plant, succeeds well when forced, and the flowers last a long time in perfection. It requires about four weeks to bring it into flower. Cultivated roots should be used instead of collected ones, and if well cared for after the flowering season it might be used for two or three successive winters with good results. This is very useful for cutting and decoration.

Aquilegia Canadensis, our graceful wild Columbine, forces in three or four weeks, and is useful for decoration, but does not last long enough to be used for cut flowers.

Campanula persicifolia and its white variety are two good plants to force. They produce long spikes of either blue or white bell-shaped flowers and last long in perfection. It is native of Europe and requires five to six weeks to bring it into flower.

Geum coccineum plenum, a beautiful plant which is only hardy on high and well drained grounds, makes a fine pot plant, and three to five weeks of green-house culture will induce it to push forth long stems of bright red, semi-double flowers, that are very striking.

Iris Germanica in varieties, and many others of the genus, are first rate plants for forcing. They take three to five weeks, and are very ornamental with their large and beautifully colored flowers.

Caltha palustris is a very bright and striking plant, on account of its large yellow flowers. This requires two or three weeks of forcing, and being rather common in our marshes it might be easily procured. *Phlox amana* make neat cushions of pink flowers in three or four weeks after it has been taken into the green-house.



Fig. 29.—*Delphinium viride*.

Viola pedata and *Viola cucullata* are very pretty when forced, and require only a few good bright days to flower them under the glass.

Smilacina stellata is very useful not alone as a flowering plant but for the sake of the delicate green foliage, and is very effective in finishing vases or other larger decorations.

The hardy and native *Cypripediums* are excellent plants for forcing. *C. acule* and *C. pubescens* require only three or four weeks of artificial heat, while the showy *C. spectabile* takes from five to six weeks. The *Helleborus niger* is a very useful and ornamental plant when kept in a green-house for about three weeks, but the heat must be moderate, otherwise they turn green instead of white. There are many others like some of the Saxifrages which could be named, but the above will suffice for illustration.

W. A. Manda.

[The number of plants which can be forced to bloom unseasonably with the aid of a little artificial heat is almost endless. It is a question, however, whether we do not lose more than we gain in thus changing the blooming period of hardy plants. The feeling of freshness and delight which spring brings, with its bursting flower-buds, is somewhat dulled if we have been looking at these same spring flowers under glass during the winter. Each flower has its appropriate season, and is best enjoyed at that season. Daffodils gave far more pleasure in April, and June Roses in June, before they became common winter flowers. Flowers out of season, like vegetables out of season, satiate the taste, without affording the real gratification which a flower or a vegetable gives in its proper season.]

The Japanese, who, as a nation, are certainly more fond of flowers than any other people, never force them. They are satisfied with their flowers as they appear in the course of nature, and make annual festivals and holidays to go out and enjoy the blooming period of the Plum, the Iris or the Chrysanthemum.

There are tender plants enough which can be grown under glass without dissipating the pleasures of the garden and the forest, and a return to a more general use of such plants is certainly desirable.—ED.]

Forsythias.—Gardeners recognize three species, namely, *F. Fortunei*, *F. suspensa* and *F. viridissima*. Mr. A. S. Fuller says he has obtained all three from seeds of *F. suspensa*. But in a garden sense they are decidedly distinct. The brightest and best is *F. Fortunei*; *F. suspensa* is like a trailing form of *F. Fortunei*, and *F. viridissima* in wood, foliage and habit, and in color of flowers is, to the gardener, distinct from either of the others. All are in their most showy condition about the first of May, and this is the time to note their own condition as shrubs and their position in the garden. They should never be scattered haphazard about a place like yellow patches in a "crazy quilt;" nor should they be buried in thickets of other shrubs, nor planted beside a doorway, or alongside a much frequented path, or anywhere else where their presence shall have a glaring and obtrusive appearance. A little way off, as individual specimens, or grouped by themselves, they have a pleasing effect. But let them be in the vicinity of other shrubs or trees, and rising from the turf.

In their wildest and most neglected state they often appear in their least obtrusive and most effective condition, because of their open, slender, graceful form—a shower of gold from their topmost twig to the ground. But in well kept gardens, as we have to regulate the growth of Forsythias and most other shrubs, we cannot allow them unrestricted growth. In many pretentious gardens, public and private, we often find Forsythias, as well as Privet, Japan Quince, Deutzias, and the like, clipped into close, round-headed forms. Such "well-trimmed shrubs" are hideous.

An old Forsythia in a neglected yard, with its golden wands rising and curving and drooping to the turf in fluent grace—surely this is more beautiful than a leafless lump that harmonizes with nothing in Nature. While we studiously avoid the clipped monstrosity, we must curtail the freedom of the wild plant if we would have a handsome shrub and profusion of bloom. And now, after the plants have done blooming, is the time to begin. Shorten back the young (last year's) wood to within a few joints of its base, and cut out gnarled, scraggy and weakly old wood; prevent overcrowding of either old or young wood, and if the shrubs have been neglected so that the old stems have grown up high, leaving the bottom naked, do not hesitate to cut them hard back. The points to be observed are: maintain a good supply of young wood from the ground up, and have the bushes open enough to admit light and air sufficient to well ripen the shoots before next fall, and in this way secure an abundance of flower buds for the spring's display, and work for medium-sized hard wood, rather than

stout, sappy growths, and do not cut out the little twigs. Never prune Forsythias from June till they have done blooming, except to thin out overcrowding shoots

H. F.

Campanulas.—In overhauling and top-dressing our rock-garden a few days ago I was astonished with the extreme hardness and accommodating character of the Bell-flowers. These sow themselves freely, coming up in crevices and on ledges everywhere. *C. Carpathica* produces some well-defined varieties and some fine hybrids. *C. turbinata* is one of the most distinct and best. The flowers are purple, and comparatively large, but the chief varietal distinction, and one always relied upon, lies in its being uniflorous. This variety comes fairly true from seed. *C. pelviformis*, also very handsome, was sent out by Messrs. Fræbel, of Zurich, as *C. turbinata pelviformis*, having been selected from a batch of the variety *C. turbinata*. This variety seldom comes true from seed, and needs to be propagated by division, which is easy. The variety *Hendersoni* is a distinct hybrid, never producing fertile seed—at least by its own pollen; what it would do if cross-pollinated by *C. Carpathica* I do not know, but it would be interesting to try. The plant's habit is stout, growing 1 foot high, having much-branched flower stems, the flowers being similar in shape and color to those of *Var. turbinata*, but much larger; altogether a handsome and somewhat rare plant. *C. Carpathica turbinata* × *pulla* is noteworthy on account of being a hybrid between two very distinct species. *C. pulla* is the prettiest of all the dwarf varieties, having wiry underground stolons and uniflorous flower stems with pendulous, truly campanulate flowers of dark purple. The hybrid retains the character of *C. pulla* (even to the extent of bearing pendulous flowers) in all but the shape of the flowers, which resemble those of *Var. turbinata*, except being a little smaller. *C. rotundifolia*, the "Harebell" and "Bluebell," grows about one foot high, producing graceful panicles of small, truly campanulate flowers.

T. D. Hatfield.

Magnolia stellata.—A fine specimen of this beautiful Japanese shrub, which flowered profusely a couple of weeks ago in a yard on Fifth Avenue, near the Central Park, attracted the admiration of the public. *Magnolia stellata*, which is also known as *M. Halleana*, was introduced a few years ago by the Messrs. Parsons from Japan, where it is a favorite garden ornament. It is a native of the forests which cover the slopes of Mount Fusi Yama, where it is said to become a small tree. Like *M. conspicua* and *M. obovata*, *M. stellata* belongs to the section of the genus in which the flowers appear before the leaves. They are white, deliciously fragrant, three inches in diameter, the sepals silky-hairy externally, oblong-obtuse, much shorter than the narrow linear oblong petals, which are at first spreading, giving to the flower when expanded the appearance of a pure white star. Later they become quite reflexed. The obovate leaves, borne on short petioles, are narrowly obovate, two to five inches long. *M. stellata* requires the same soil and cultivation as *M. conspicua* and the other Yulan Magnolias. It begins to flower freely when only a foot or two high; and is an important and interesting addition to our perfectly hardy early flowering shrubs. S.

Arsenical Poisons on Elm Trees.—The first brood of larvæ of the Elm-leaf beetle will appear in June. Timely applications of Paris green or London purple in water sprayed over and among the foliage of the trees will destroy this pest. But the spray will leave some poison on the grass. The poisoned trees need not be in a pasture lot nor around the dwelling-house to be a source of danger. If there is the least possible chance of horses, cows, sheep or other animals grazing about them, or of children playing there, the greatest caution should be observed in using arsenites.

A Group of Trees or Shrubs—A Suggestion.—Why not take Red Maple, Red Bud, Spice-bush, Shepherdia, Fragrant Sumac, Cornelian Cherry, Leatherwood, Japanese Corylopsis, and other trees and shrubs of somewhat similar character, which bloom before the leaves appear, and group them near each other in some park, or large wooded estate. Hazels and other plants bearing conspicuous catkins might also be admitted, but Magnolias, Forsythias, Japan Quinces, and plants with showy and discordant flowers excluded. As they differ so much in some other ways, much discrimination will be needed in using them. I have never seen such a group, but have a strong inclination to form one. R.

Plant Notes.

Japanese Apples.

OF the many species and forms of the Apple cultivated for the sake of their flowers, none is more beautiful than the plant introduced from Japan by Von Siebold, and known in gardens as *Pyrus floribunda* or *P. Malus floribunda* (*Fl. des Serres* xv., t. 158.—*Revue Horticole*, 1866, p. 312 with t.) Maximowicz has referred this plant to the Chinese *P. spectabilis*, but the deciduous calyx and very small persistent fruit seem to point rather to a derivation from the Siberian, Manchurian and north China *P. baccata*.

It is a vigorous shrub or small tree, very common in Japanese gardens, with long, straggling branches, forming a head sometimes twenty feet through. The bark is dark

Francis Parkman's garden in Jamaica Plain, where this Apple, now a stout bushy tree, perhaps eighteen feet in height, still flourishes. The same variety was afterwards sent to the Messrs. Parsons, of Flushing, by Dr. G. R. Hall, an American physician long a resident in Japan; and it now appears in trade catalogues, both as *Pyrus Parkmani* and *P. Halleana*. It only differs, however, from Von Siebold's plant in its semi-double, darker colored flowers; in the deeper color of the young leaves and peduncles, and in its smaller fruit.

No shrub or shrubby tree surpasses these Japanese Apples in marvelous abundance and beauty of bloom, which is most attractive, perhaps, just before the pink or red flower-buds expand and display the lighter colors of the interior of the flowers. It is astonishing that they are not better known and more often planted. They are beautiful as single specimens and still more beautiful



Fig. 30.—The Double Flowered Japanese Apple.

brown, or nearly black; smooth and shining. The leaves are oval, rather coriaceous, dark green above, lighter and somewhat pubescent on the under side. The numerous large flowers appear with the leaves; they are borne on slender peduncles three or four inches long, and completely cover the branches. The petals are oval-elliptical, longly unguiculate, rose on the outside, nearly white within. The abundant fruit from which the calyx falls before maturity, leaving a minute eye, is hardly larger than a pea; it is round or sometimes oval, dull yellow or red in color, and decays and then dries upon the branches before separating from the peduncles which remain attached to the branches until the following spring.

Our illustration above represents a flowering branch of a form or variety of this Apple from a plant which was sent to this country by Mr. F. Gordon Dexter, of Boston, about twenty-five years ago, with the first bulbs of *Lilium auratum* and the first plants of the golden *Retinospora* and of *Thuopsis dolobrata* which ever came to the United States. These plants found a home in Mr.

when grouped in great masses. They flower profusely when very small, grow rapidly and continue to improve for years. They thrive in all soils, and neither intense cold, great heat nor drought affect them. No foreign ornamental tree introduced into this country adapts itself more readily to its peculiar climatic conditions.

As Mr. Dawson has shown in some remarkable seedlings which he has raised at the Arnold Arboretum, the Japanese Apple, like the rest of the family, varies considerably from seed, and can be still further improved by careful selection—a fact of which enterprising nurserymen should not be slow to take advantage. C. S. S.

Heuchera sanguinea in Mexico.—Accustomed during several years to meet with this plant on the mountains of Arizona and Mexico, and always admiring its mottled leaves and striking flowers, I feel grateful to Mr. Hatfield for recommending it for cultivation, and am prompted to tell of a visit made last September to the station (or, at least, the vicinity) of its original discovery, whence Wislizenus in 1846 brought dried specimens to Dr. Engelmann, who praised it as "beautiful

and delicate, and certainly the most ornamental species of the genus."

The station is on La Bufa Mountain, overlooking the mining town of Cusihiurichic. Here, hanging from fissures of cliffs of porphyry facing northward, or planted on their narrow shelves, 1,500 feet above the din of the town and the smoke of its smelters, an abundance of strong plants was seen, their rosettes of leaves beautifully marked with white and purple in the strong light of the place, and their flower scapes—bright scarlet when fresh, but maturing or drying crimson—like light plumes tossing in the mountain breezes. From the nature of its habitat—cool ledges, either wet or dry, and even the rich humus at their base—this plant would be expected to thrive in rockeries; and that it will prove hardy in most climates may be inferred from the fact that along the northern limit of its distribution it is exposed to many degrees of frost.

. See Cent. Diet. *arnole*. C. G. Pringle.

Vegetable Soaps.—In widely separated countries there are plants, in some cases herbs, and in others trees, which the natives use as a substitute for soap in washing. Whoever has had his linen washed in northern Mexico will bear witness to the efficacy of the root called *axmole* in cleansing the linen, but his shirts will come back minus buttons, not so much caused by the deterative power of the *arnole*, as by the primitive washing machine used by the Mexican laundress, who selects a large flat stone upon the margin of a stream, upon which the fabric is laid, and beaten vigorously with another flat stone. The *arnole* root is the root of a species of *Phalangium*, one of the Lily family, and dried and made into little parcels, is sold in every small town. The soap-wort, *Saponaria officinalis*, common in this country, is known as "Bouncing Bet." This was used in Europe in washing as a substitute for soap, and in hard waters was preferred to it. The number of plants that may be used as a substitute for soap is quite large; the most important of which is the soap-bark tree of Chili, where it is called "Quillai," or "Cullai." The native name has been taken for the botanical name of the tree, which is *Quillaja Saponaria*. The genus *Quillaja* belongs to the Rose family, and five species are known, all South American; three are Chilean, one Peruvian, and one Brazilian, the most important being the *Q. Saponaria* of Chili, as its bark is largely used in its own country, and forms a considerable article of export. This is a large tree fifty to sixty feet high, with evergreen leaves, and usually small white flowers. Its bark, which is rough without, internally consists of light colored layers, which contain an abundance of saponine, which they readily impart to water, causing it to lather in a similar manner to soap. The bark is in general use in Chili on washing day, and is exported to other countries. It is to be found in our city drug stores, where it is in demand by those who wish to use it for cleansing silk materials. It is said to remove grease and other spots and to impart a remarkable lustre to woolen goods, and is used as a wash for cleansing the hair.—*American Agriculturist*.

The Rock-Garden in Spring.

Fritillaria pudica, although one of the first of the Rocky Mountain plants known to botanists, is very rarely seen in cultivation. It was discovered in the mountains at the head waters of the Missouri, in what is now the Territory of Montana, by Lewis and Clark, in their memorable journey across the continent early in the century, and was described and very well figured by Pursh in his North American Flora. It is a low, leafy plant, six to nine inches high, with alternate linear, glaucous leaves, and clear, bright yellow, pendulous, bell-shaped flowers, nearly an inch across. They are solitary, or sometimes produced in pairs. This plant does not always take kindly to cultivation, but it can be grown in a warm, sunny rockery, if the bulbs are planted deep in the ground, and careful drainage is provided for them. It is well worth all the trouble it takes to cultivate it, as it is one of the most delicately beautiful of all the *Fritillarias*, as all those who have had the good fortune to see great masses of this modest flower blooming far above the timber line, amidst the melting snows of the Rocky Mountains, can testify.

Orobis vernus is one of the hardiest and in every way most satisfactory of the early flowering herbaceous plants. It is a native of central and southern Europe and belongs to the Veitch Family. It grows about one foot high and forms a compact, bushy mass of foliage, which at this time is covered with handsome, nodding flowers. These are produced in great abundance on axillary peduncles, and when they first open are purple and blue in color, veined with red, later turning blue. The leaves are composed of two or three pairs of

ovate-lanceolate, acuminate, shining leaflets. This handsome Pea has been an inhabitant of gardens for 250 years, but it is not now very often seen in this country. It is entirely hardy and grows in any garden soil. It can be increased by division of the roots, or by seed, which is abundantly produced every year.

The Pasque Flower (*Anemone Pulsatilla*) is also in bloom. It is a handsome species of northern Europe and Russian Asia, long cultivated for its large, solitary, violet-purple flowers, very silky on the outside of the sepals. The carpels are long and feathery, like those of the Clematis. This plant succeeds best in well drained and dry situations, and naturally prefers a limestone soil. It forms, when well grown, handsome masses of delicate, finely divided foliage; and flowers freely. A beautiful and interesting form of the common wild Wind-flower (*Anemone nemorosa*), with perfectly double flowers, which was discovered in Connecticut a few years ago, is also flowering here. It is a plant of considerable value, lasting much longer in bloom than the common form.

Two very familiar northern wild flowers of the Lily Family, the Wake Robin (*Trillium grandiflorum*) and the Bellwort (*Uvularia grandiflora*), should find a place in every spring garden. *Trillium grandiflorum* is a low perennial herb, with a simple naked stem, bearing at the summit a whorl of three rhomboid-obovate leaves and a single large, spreading white flower, two or three inches across, and turning rose color in fading. *Trillium grandiflorum* likes a deep, rich soil, and prefers the shade of neighboring trees to the open sunny border, as its home is in northern woods. It may be increased by seed, although it is easier to obtain plants from the woods, which require, however, two or three years to become thoroughly established and to show their greatest beauty. *Uvularia grandiflora* has drooping, yellow, bell-shaped, Lily-like flowers, single or in pairs, at the summit of a slender, leafy stem, one to two feet high. It may be increased by division, and, like the *Trillium*, enjoys the shade of trees and a deep, rich soil. Few plants possess a more graceful, delicate beauty, or better repay the trouble of moving from the woods to the garden.

Corydalis solida, or, as it is often known in gardens, *Corydalis bulbosa*, is the earliest of the genus in flower. It is a pretty little herb a span high, with a tuberous root-stock and long-stalked biternate glaucous leaves, and rather large purple flowers in short terminal racemes. It thrives in dense shade, and is now springing up in all directions from self-sown seed. It is a perfectly hardy plant which may be expected to become thoroughly naturalized in this country. It is a native of central Europe.

More difficult to establish, and much more delicate and beautiful, is its near relative, the Dutchman's Breeches (*Dicentra Cucullaria*) of our western woods, now blooming here. It is a dwarf plant with grain-like tubers, which send up finely cut, graceful, glaucous leaves, and a slender scape, bearing four to eight pretty white flowers tipped with yellow. The generic name *Dicentra*, formed from two Greek words signifying twice and spur, refers to the two-spurred, heart-shaped corolla of these plants. *Dicentra Cucullaria* when first taken from the woods should be potted or boxed in rich sandy loam, and kept close in a frame or cool green-house until new roots are formed. It should then be wintered in a cold-frame and not planted out until spring, which operation should be performed without disturbing the soil surrounding the delicate roots. Once established in a rich soil and in a shady situation, it will require no further attention.

It is often supposed that the common English Primrose (*Primula vulgaris*) is not hardy in this country. Here it succeeds admirably on a dry, grassy bank, which is partially shaded in summer, but which now, when the plants are in bloom, before the neighboring trees have expanded their leaves, is in the full sun light. The only secret of success here with this charming plant is high, well drained soil, the use of good, strong, well established plants, grown in frames for the purpose, and a slight protection of dry leaves left in autumn where they fall from the trees. It well repays this slight trouble.

Boston, May 6th.

C.

Notes from the Arnold Arboretum.

THE earliest of all the great collection of *Prunus* in flower is *P. Davidiana*, a shrubby Peach from Mongolia, where it was discovered by the Abbé David, who found it also covering the hills in the neighborhood of Gehol (the summer residence of the Emperor), and near Peking. The specimens in the Arboretum were raised from seed sent by Dr. Bretschneider, long a member of the Russian Legation at Peking,

to whom the Arboretum owes many interesting plants. *Prunus Davidiana* is a shrub three to six feet in height, or, in cultivation, according to Franchet ("*Plantæ Davidianæ*," p. 103), a robust tree fifteen to twenty feet high. The bark of the branches and stem resembles that of a Nectarine, and without the fruit the most experienced Peach grower would hardly guess the true character of this plant. It has considerable ornamental value. The white, or sometimes pink flowers, are produced in great profusion, and the flower buds are much hardier than those of other Peaches. This suggests the possibility that this plant might be used in creating a new race of flowering Peaches able to bear the cold of the Northern States. The fruit, however, of *Prunus Davidiana* has no value. It is small, downy, nearly spherical, less than an inch in diameter, grayish white, turning yellow at maturity. The flesh is very thin, separating easily from the stone, even before the fruit is ripe, and is dry and tasteless, lacking almost entirely the odor of the Peach. It wrinkles on the branch before maturity, and soon decays. *Prunus Davidiana* is interesting as the representative of what seems a type intermediate between the Peach and the Almond. A few days later *Prunus tomentosa* is in bloom. This is a shrubby Cherry, forming a dense, compact and handsome bush three or four feet high. It is a native of northern China, whence, probably long ago, it was introduced into Japan, where Von Siebold met with it occasionally in gardens; and admirably figured it in his "*Flora Japonica*," t. 22. This species can be distinguished from the other members of the genus *Prunus* by the thick long tomentum which covers the entire under side of the leaves. The flowers which quite cover the long vergate stems are sessile or short stalked. They are white, tinged with pink, and about the size of those of the common Cherry tree. They open when the young silky leaves are about one-third grown; and the association of the handsome abundant flowers and delicate young foliage is particularly attractive. The handsome fruit ripens in July; it is round or nearly oval, almost transparent, deep scarlet in color, and has a pleasant but rather insipid flavor. *Prunus tomentosa* is perfectly hardy; and its neat habit, handsome foliage, early flowers and showy fruit, entitle it to more general use along the margins of shrubberies or in the borders of small gardens.

Lonicera Standishii and *L. fragrantissima* are in bloom. These are probably forms of the same species. The branches of the former are scabrous, however, and the leaves are deciduous, while in *L. fragrantissima* they are almost evergreen. Both plants produce large, nearly white, deliciously fragrant flowers before the appearance of the new leaves. They are tall, stout, twiggy shrubs, with flexuous pale yellow-brown branches, and oblong acuminate leaves, three to five inches long. They are both doubtless of Chinese origin, although *L. fragrantissima* is a common garden plant in Japan. *L. Standishii* is by far the hardier of the two here, and this fact and its deciduous leaves point to a more northern origin. It was introduced into England by Fortune, the Chinese traveler, who found it a common garden plant at Shanghai. Neither of these plants are very hardy here, but splendid specimens of Fortune's plant are a conspicuous feature in the shrubberies of the Central Park in New York during the last days of April.

A dwarf variety of the common Leather-leaf (*Cassandra calyculata*), sent to the Arboretum by the Messrs. Veitch, is in bloom fully ten days earlier than the American plant. It is a compact and handsome shrub, eight or ten inches high, and well worth a place in any garden border. And this is true of *Myrica Gale*, which, although a denizen of the borders of ponds and deep, cold, submerged northern swamps, is perfectly at home here on a dry, gravelly and exposed ridge, where it has been flowering profusely during the past week. The Sweet Gale is a handsome and very fragrant deciduous shrub, three to five feet high, with pale wedge-lanceolate leaves, appearing later than the flowers, which are produced in stout, dense, chestnut-brown catkins from the upper axils of the branches. It is a native of the northern Atlantic States of northern Europe and of Siberia.

Salix chlorophylla, a low spreading bush, a few inches high, from the Alpine summits of the White Mountains of New Hampshire and from British America, takes kindly to cultivation, and has been in flower for a fortnight. It will make a useful plant for the margins of shrubberies, where a bright, pleasant green is desired rather than conspicuous flowers. Two other North American shrubs, now in bloom, can be used with great advantage for the same purpose. They are the shrub Yellow Root (*Zanthorhiza apiifolia*), a member of the Crowfoot Family, and the fragrant Sumach (*Rhus aromatica*). The *Zanthorhiza* inhabits the shady banks of streams in the Allegheny Mountains. It is a low and very hardy shrub, with

erect stems twelve to eighteen inches high. The flowers are small, polygamous, brownish purple, and arranged in short, compound drooping racemes, which appear with or just before the pinnate leaves from large terminal buds. The plant spreads rapidly by the development of stems from the stout roots, which, as well as the bark, are intensely yellow and very bitter. It is a free-growing plant in cultivation and an excellent dwarf under-shrub, easily increased from seed or by division. The Fragrant Sumach is one of the best plants, if not the very best, to connect, in this climate, a mass of larger shrubs, with the turf of a lawn. It is low and spreading and feathers out over the grass in pleasant, irregular masses of pale green, and is never obtrusive with flowers too conspicuous for such situations, or with inharmoniously colored foliage. The minute yellow polygamo-dioecious flowers, in clustered catkin-like spikes, precede the leaves, which are trifoliate, pubescent when young, thicker and almost coriaceous at maturity, the leaflets unequally cut toothed, the middle one wedge-shaped at the base. They are fragrant when crushed. *Rhus aromatica* is a native of the northern and north-western States, where it inhabits dry, rocky hillsides. It flourishes in any garden soil, and can be easily propagated by layers, or from seed, which is very sparingly produced and not easy to obtain. The leaves in autumn are brilliantly colored in orange and scarlet. This plant is too little known and appreciated in gardens.

The leafless branches of the Spice-bush (*Lindera Benzoin*) are covered with dense compound clusters of bright yellow flowers. This is a tall and pungently fragrant shrub, which is easily cultivated, and recalls, at a little distance, the European Cornelian Cherry (*Cornus mascula*). Its early flowers brighten low, damp woods and pond sides through the Northern States.

Andromeda floribunda, one of the hardiest of the broad-leaved evergreens peculiar to the Allegheny Mountains, is loaded with racemes of pure white, handsome flowers. It is a desirable plant, which forms in cultivation a dense, leafy shrub, four or five feet high, and which will grow in nearly all soils and exposures. A slight covering in winter of evergreen boughs protects it from burning, and is of general advantage to the plant, and this is true, in this climate, of nearly all broad-leaved evergreens.

The Mayflower or Trailing Arbutus (*Epigæa repens*) is now well established in the Arboretum, and is in full flower—almost ten days later, however, than in the woods at Plymouth, where it abounds. It is a prostrate, trailing and scarcely woody plant, with evergreen, rounded, reticulated leaves and deliciously fragrant, rose colored flowers in small axillary clusters. It is the best known and most popular wild flower of New England, and efforts to cultivate it are often made. The Mayflower, however, is extremely impatient of confinement and can be naturalized in new localities only with the greatest care. Young plants (it is useless to try to transplant old plants) should be taken up late in September or in October, and carefully potted or planted in shallow boxes, in a compost of sandy peat, and then kept in a close atmosphere in a green-house or frame until new roots are formed. The plants can then be wintered in a cold pit, but should not be planted out until the second spring, by which time they will be strong and vigorous and able to take care of themselves. They will do best if planted on the north side of a hill in a compost of rather light sandy soil mixed with leaf mould. When once it has a firm hold of the soil, the *Epigæa* will spread rapidly, and will repay the labor necessary to establish it. J.

May 7th.

The Forest.

The Pennsylvania Forestry Association.

THE annual meeting of this active society was held in Philadelphia on the evening of May 3d, with Burnett Landreth in the chair. The first address was by Dr. N. H. Egleston, of the Department of Agriculture, on the æsthetics of tree culture. Mr. J. B. Harrison was the next speaker, and after a cordial allusion to the poetic beauty of the address which had preceded his own, he said, in substance:

"Our chief interest in forestry is, of course, in the preservation and reproduction of trees for the most common uses, and we have to deal with large masses of forest in their relation to the water supply of vast areas of country, and with forestry in detail, in the case of woodlands in the hands of individual citizens. It is encouraging to see so many people drawn together

by interest in this subject. I recall the years of lonely effort in this field, when the only forestry meetings were held when two or three pioneers met to compare notes of their observations, and consult regarding plans for arousing public attention to the rapid destruction of the forests in every part of our country. There has been considerable discussion of forestry subjects within the last few years, but the practical results achieved, in the preservation of our forests, are, thus far, very slight.

"The Adirondack mountain region in northern New York is by far—or it *was* a few years ago—the most important body of forest lands in the eastern portion of our country. But these magnificent woods have now been for several years in process of rapid extinction. There was a well equipped Forest Commission in New York a few years ago, the most competent, indeed, that has yet been appointed in any State of our country, and this Commission made a thorough examination of the condition of every part of the great North Woods, and reported a plan which, if it had been adopted by the State, and administered in good faith, would have stopped the progress of ruin and desolation, insured the preservation of most of what at that time remained of the original Adirondack forests. But there was sufficient ignorance, indifference, apathy and other unfavorable influences, even in New York, to defeat this carefully matured plan. Vested interests and partisan political considerations, working together in defense of existing methods of mismanagement, were too strong to be overcome by the friends of the forests, and the process of destruction has gone on with little check until now. I know of but two or three men who have any just idea of the extent and thoroughness of the ruin which has been wrought in northern New York. But lumbermen who have known the Hudson River for forty years say that the summer flow of that stream has diminished one-fourth or one-third during that time. The railroad people are completing arrangements for the destruction of most of the woods which now remain in that region, and efforts are being made to obtain legislation which will permit the leasing of tracts of State forest lands to rich men from the towns. It would be hard to devise a more unreasonable or mischievous measure. It ought to be promptly condemned by the people of the Empire State.

"The destruction of the woods goes on in nearly every part of our country in much the same way. I have observed the work of the tree-slaughterers in the turpentine forests of our southern Atlantic States, and have watched the work of railroads and lumbermen, and of forest fires, in the great mountain forest regions of the West. I have studied the magnificent forests along Puget Sound and in the Cascade Range through Washington Territory and Oregon. The forest masses in every part of our country are being rapidly and inevitably destroyed. As they perish the water-supply for the great river systems of the country is diminishing, and vast territories are exposed to the evils of destructive floods and exhaustive drought.

"The question of methods for the preservation of our great forests is one of exceeding difficulty, and the chief obstacles are psychological—that is, they are found, not in any feature or circumstance of the condition of the forests themselves, but in the habits and qualities of mind, thought and character of the American people. As a nation we are much disposed to an excessive reliance upon legislation as a means for the attainment of nearly all objects which we regard as desirable. The fact is that it is comparatively easy to obtain almost any imaginable legislation. But law alone, in relation to any subject so complex as the preservation of our forests, is of very slight value. No act of Congress, or of a State Legislature, can have much effect in changing the habitual course of thought, feeling and action in the mass of the people of our country. But precisely such a change is indispensable, if our forests are to be preserved.

"The truth is that nothing short of an advance in civilization on the part of the American people would be sufficient to stop the process of forest destruction which is now everywhere going on. The wisest forest laws would inevitably be administered very ineffectively at first. Many mistakes would be made, and if we have to depend chiefly upon the effect of legislation for the preservation of our forests, it is most probable that by the time we have learned how to take care of our forests efficiently we shall have none remaining to take care of. To prepare us for the wise care of the varied and widely related interests which depend upon our forests we need important and radical changes in the thought and spirit and character of our people. While the popular feeling about wealth, about *bric-a-brac*, about the objects of life remains what it is, the destruction of our forests, and of all that depends upon them, is likely to proceed unchecked.

"I talked with a farmer in south-western Iowa last summer who has cut off thousands of Black Walnut trees from ten to fifteen inches in diameter, during the last thirty-five years, and sold them for cord-wood. I showed him price-lists for black walnut lumber and veneers from New York dealers, and easily convinced him that if he had let his walnut timber stand till now it alone would be worth far more than his whole farm is now worth. He said he had no doubt it was true. Then he added, 'But it is too much trouble to think of anything so far ahead.' That is the key to many things in our national character.

"In our thought of the supreme value of legislation for forest preservation and reproduction we are beginning at the wrong end of the business, and are putting that first which should be last. A long course of education of the people regarding the facts of the subject will be necessary before adequate legislation can be devised or efficiently applied. What we chiefly need now is an era of teaching and instruction regarding the subject—teaching that shall be intelligent and intelligible, comprehensive, coherent, systematic, iterant and authoritative, because based upon competent knowledge. The greatest step in advance ever taken in this country in connection with forestry subjects has been made this year, in the establishment, in New York, of a journal devoted to the discussion of forestry in all its aspects, and to the dissemination of knowledge in relation to this subject.

"Europe, and every other part of the old world, can give us all needed lessons of warning; can show us the tragical consequences of man's want of wisdom, care and foresight in his treatment of the forests in every land. But even for these lessons we do not need to cross the ocean. We already have created small deserts in various parts of our own country, where the area of desolation and of cureless ruin grows larger every year. I remember places where the drifting sand is steadily swallowing more and more of the once fertile slopes where a century ago the White Pine grew four feet in diameter.

"I do not think, however, that Europe can give us much help as to methods of forest care or management. The psychological conditions are so very different here, that we shall have to learn our own lessons by our own observation and study and experience. Our social and political conditions are essentially different from those of any European nation. So are the relations of capital to the mass of the people. I have no doubt that in time we shall evolve American methods of forest management. The best means to that very desirable end must be vigorous, free, intelligent and persistent discussion."

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Any one acquainted with the southern side of Long Island will readily recall the vast stretches of low land fringing the borders of the various bays for which that part of the coast is noted. Its only use, apparently, is to furnish a little salt hay; but it has often occurred to me that there might be some tree which would grow in such situations, and be worth planting there. Has anything ever been tried in these dreary wastes, and with what success? If not, what would you recommend for trial? It goes without saying that if only some arborescent growths could flourish in such spots where the soil must be saturated with water more or less saline, the land would in time become very valuable.

I believe there have been some interesting and successful experiments in improving low sandy wastes along the coasts of New England and New Jersey, but I never heard of any attempts to reclaim the marshy borders of our great salt-water bays. Very truly yours,

New York, May 1st, 1888.

A. Z.

[No tree hardy in the Northern States will grow in saline soil or in situations where its roots reach salt water. The salt-marshes, which are so common along the north Atlantic Coast, are really valuable for the hay they produce. This crop in some parts of New England is estimated to yield six dollars a year net per acre; and marsh land finds a ready market at \$100 an acre. Such land is too valuable, therefore, to plant with trees even if trees could be made to grow on it. The low, rolling, sandy hills so common at some points on the south shore of Long Island might be planted to advantage with Pitch Pine (*P. rigida*) in the same manner that similar land on Cape Cod has been covered with this tree.—ED.]

Pictures of Japan.

AN interesting collection of pictures of scenes in Japan was recently exhibited in the Reichard gallery on Fifth Avenue. The painter, Mr. Theodore Wores, is a young Californian, who, after completing his studies at Munich, passed three years in Japan and is now established in a New York studio. Some of his pictures represented street-life in the Island-empire or works of architecture, but many dealt with themes of exceptional attraction to lovers of flowers and students of gardening art. In one, for example, we saw a long avenue of pink-blossoming Plum-trees, with a couple of young girls examining the strips of paper, inscribed with impromptu verses, which, in accordance with a pretty national custom, are frequently hung on these favorite trees when they are in flower and the people go in thousands to enjoy them. The wide road, which for the moment wore the aspect of a great flowery arbor, had an open space in the centre wide enough for the passage of the small vehicles of the country and then on either side a line of oval stones sufficiently raised to give comfortable footing in wet weather. Another canvas showed two young girls in a jinriksha, bringing home great branches of the double-flowering pink Cherry, and on more than one we saw large trees of this species in full bloom, in front of tea-house or temple. Another showed the balcony of a tea-house overhanging a pond in which floated great golden carp, and overhung itself by an immense Wistaria-vine, with clusters of flowers, such as are not uncommon in Japan, fully three feet in length. Another had as the foreground a Japanese room, the widely open side of which gave an enchanting glimpse of a garden with miniature streams and bridges, and, in front of a small building, a large tree with smooth light-colored bark and coral-colored blossoms, called in Japan *Sarosse-souberi*—the Indian Crape Myrtle (*Lagerstroemia Indica*). A glimpse of a garden at Nikko, with a tiny cascade overhung by a Weeping Willow, was also interesting; but the most attractive of all the pictures to a lover of artistic floral arrangements was the one called "A Lotus Pond." The pond formed part, apparently, of a large park, and was itself a rectangular basin, perhaps sixty or seventy feet in diameter, filled by a thick, tall growth of pink Lotus. It was enclosed by a well-built stone wall crowned with a simple yet dignified stone balustrade. Large rectangular posts finished with ball-like ornaments and widely spaced, were the chief supports of a plain rectangular rail, while the many lesser intermediate supports were diamond-shaped on plan and set anglewise to the road. Where the water of the pond flowed off in a little stream the road was carried over an arched bridge of graceful low curve, and the balustrade here became a solid paneled parapet, sparsely ornamented with carving. Nothing better could be found for imitation in this country than this balustrade and bridge, and many lessons in the designing of wooden railings might also be gathered from Mr. Wores's pictures. When used in connection with much foliage they appear to be generally painted of a soft pale green, lighter than the green of the foliage but harmonious with it, having nothing of that crude, acid tinge which our own green pigments so often show. And in all cases the uprights were plain and far apart, and less conspicuous in effect than the three or four horizontal members. The contrary is usually the case in our own wooden fences, but a comparison of their trivial, fragile appearance with the simple solidity of these Japanese fences would convince any eye that we should do well to change our practice.

It was interesting to note in one of Mr. Wores's street-scenes how the artistic instincts of the Japanese display themselves even in the humblest and simplest articles of utility. The chief figure in the scene was an itinerant flower-vendor, and his wares were carried, not in baskets, but in two great open cages of bamboo, to the uprights and cross pieces of which were attached hollow sections of bamboo, some large and some quite small, in which the flowers were placed—always in bunches of a single sort. The whole arrangement was light, portable and altogether practical, yet as pleasing to the eye as though beauty had been the sole end in view.

M. G. van Rensselaer.

The Boston Flower Show.

The May exhibition of the Massachusetts Horticultural Society held on the 12th inst. was far richer than was expected, not only in plants competing for prizes, but in the variety and excellence of other contributions. Among the most noticeable plants was a magnificent pyramidal specimen of the Indian *Azalea decora* nearly eight feet high from Mr. J. L. Gardener, for

which he was awarded a silver medal. Denys Zirngiebel exhibited several dishes of the best strain of Pansies ever shown in this country. The flowers were more than three inches in diameter, of good form and substance, and the colors cannot be described. Some were a genuine red, while others had almost all imaginable colors blended together. The committee justly awarded a silver medal for those beauties. Good plants of Calceolarias were shown by Thomas Clark and W. Spencer, and in the first collection was a plant with two-lipped flowers which seems quite desirable. Some fine Pelargoniums were sent by W. Martin, gardener of N. T. Kidder, Esq., and some by J. H. White, who also showed some good Gloxinias. Mr. W. Spencer exhibited well grown plants of *Cattleya Skinneri*, *Cattleya Mossia* and *Anguloa Clovesii*, while Mr. Martin staged a fine plant of *Dendrobium thyrsiflorum* with eight spikes, *Cypripedium Lawrenceanum* and *C. barbatum*. Mrs. P. D. Richards showed a very instructive collection of named native plants. The display of cut flowers was very attractive.

Retail Flower Markets.

NEW YORK, May 19th.

There are complaints of dullness of trade throughout the city. Flowers are plentiful, but the average quality of them is not satisfactory. Hybrid Roses are short-stemmed as a rule. American Beauty, Magna Charta and Baroness Rothschild are the Roses arriving in the finest condition. Ulrich Brunner is also very handsome. Long-stemmed flowers of the above varieties bring 75 cts. each. General Jacqueminots are small and scarce. The best cost \$3 a dozen. Countess of Pembroke and La France sell for \$2.50 a dozen. Madame Cuisin, Bride and Catherine Mermets cost \$2 a dozen. Moss Rosebuds are esteemed the choicest of the Rose stock. These are \$5 a dozen. Puritan Roses are \$4 and \$6 a dozen. Perles, Niphetos and Souvenir d'Un Ami are \$1.50 a dozen. Papa Gontiers and Bon Silenes are 75 cts. a dozen. Carnations are 50 cts. a dozen. Southern Lilacs have disappeared, and this flower is scarce; although a few come from New Jersey. Violets are virtually out of market. Pansies are very handsome, and 25 cts. a dozen. Dutch Hyacinths are \$2 a dozen, but are in slow demand. Tulips are 50 and 75 cts. a dozen. Daffodils do not drop below 75 cts. a dozen, and Lilies-of-the-Valley are disposed of easily at \$1 a dozen if well grown. Mignonette is 25 and 50 cts. a dozen. The large spiral sorts have disappeared. *Narcissus poeticus* costs 75 cts. a dozen, and Gardenias are \$3. Callas bring \$3 a dozen, and Gladioluses the same. Orchids are much used for dinner decorations. Cattleyas are the favorite variety. They cost 50 cts. a flower.

PHILADELPHIA, May 19th.

The only novelties worthy of mention that have appeared this week are single Dahlias and Gladioluses. Single Dahlias are admirable for cut-flower purposes; they sell at \$3 a dozen. Gardenias are more plentiful, and sell at \$2.50 per dozen. Roses in general are not so good in quality. Catherine Mermets, Brides, Bennetts and La France sell at \$2 a dozen. Perles and Sunsets from \$1 to \$1.50. Niphetos and Papa Gontier, \$1; Bon Silene, 75 cts.; Madame Cuisin, \$1.50; Madame Gabriel Luizet, \$3 to \$4. These retain their delicate coloring, but are falling off in size. Baroness Rothschild's are \$3. Jacqueminots, \$1.50 to \$2.50. American Beauty rules higher in price than any other Rose now offered—quotations are from \$3 to \$5, choice flowers selling readily at the latter figure. Tulips range from 50 cts. to \$1—the fine late varieties selling at the highest price. Carnations and Mignonettes 35 cts., and Pansies, 25 cts. a dozen. Lilacs sell on the street corners as low as 10 cts. a bunch of ten sprays. Apple and Cherry blossoms are occasionally offered at 10 cts. a bunch. The Maidenhair Fern (*Adiantum concinnum*) sells at 35 cts. a dozen fronds. It is used largely in plateaus, with the living plants plunged in Moss; in this way they remain fresh for a long time. Gladiolus in limited quantities sells at 25 cts. a spike.

BOSTON, May 19th.

The week of rainy weather, so beneficial to all out-door vegetation, has had an opposite effect on hot-house productions, particularly Roses. The Roses coming to the market at present show plainly the influence of the damp, dark weather. Catherine Mermets are decidedly off color. The same is true of Bon Silene and La France. Jacqueminots are scarce and Hybrids generally almost unobtainable. Roses of the small Tea classes sell for 75 cts. per dozen. Fancy Teas, \$1.50 to \$2.00, and Jacqueminots at \$4.00 to \$5.00 a dozen. Carnations are more abundant and of better quality; 50 cts. a dozen is the ruling price for long stemmed blooms. Lilies-of-the-Valley, Tulips and Narcissus grown out-of-doors, are beginning to come in. They bring from 50 cts. to 75 cts. a dozen. Ascension Lilies are still in good supply at \$1.00 a dozen, while \$2.00 is asked for *L. longiflorum*. There is an abundance of white Stocks in market at present. The quality is of the best, and although somewhat coarse, yet their delicious fragrance makes them a welcome addition to assorted boxes of cut flowers. It is fortunate that spring flowers are popular, as there are but few very choice varieties offered. Marguerites, Pansies, Mignonette, Heliotrope, and such small flowers are abundant and very cheap. Maidenhair Ferns are now of best quality. Smilax still rather scarce.

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An Important Literature.

THE admirable report of the Connecticut State Board of Agriculture for last year, which has just been received at this office, calls to mind the rapidity with which literature of this sort is accumulating. Many of these volumes contain papers of permanent value, prepared by experts in various lines of investigation, in all departments of practical agriculture, horticulture and forestry, and in the sciences related to them. Besides these, many of the states publish reports of horticultural societies, of experiment stations, of forestry meetings and of official entomologists and botanists. To these official documents issued by the state must be added the publications of viticultural associations and of a national association of horticulturists, one of nurserymen, another of florists, and another of seedsmen, not to mention the reports of the venerable American Pomological Society. In Wisconsin, where a thoroughly organized and competently conducted system of farmers' institutes is held every year, the cream of the discussions, covering the entire range of rural economy, is gathered into an interesting volume and issued at public expense. Every year the number of these publications increases, and they keep pace in quality with the advancing intelligence of their readers on all the subjects treated. Most of them are published in large editions, which are distributed gratuitously, so that almost any one who may desire to do so can collect a good-sized library on practical horticulture and agriculture at a trifling cost.

Of course the various papers in these publications are of unequal value, and the secretaries do not always edit them as carefully as they would if the books were sold on their merits. This means that much chaff is included with the wheat, and at times the reader grows weary, and wishes that the winnowing had been done for him. Very plainly the value of these official documents could be increased and their expense diminished if their contents were more carefully selected. This evil increases as the volumes multiply, and unless some heroic reform is soon begun, the articles of real value will be buried at last under such a

mass of inferior matter that they will be practically lost. And this difficulty is increased by a lack of proper indexing. The compilers are not paid adequately for the work of careful editing and complete indexing, so that the student finds what he most wants only by laborious searching or by lucky accidents.

The increase of experiment stations under the law creating one in every state, and the fact that periodical bulletins are required from all of them under the statute, will swell the volume of this literature until it literally burdens the mails, inasmuch as it enjoys the rare privilege of being carried without postage. Perhaps the first froschet of these bulletins will have small value. Very little work of genuine worth can reasonably be expected of an experiment station before there has been time and adequate preparation for experiments. It may be added that little instruction can be looked for from these institutions unless they are officered and manned by skilled observers, trained to habitual accuracy. Indeed, it is not improbable that crude teachings, advanced with the presumption and assurance that always accompany superficial work, may in occasional instances do more harm than good. It is too evident that until there are in this country more men of scientific training who are available for work of this kind, the stations will be inefficiently conducted. It must be assumed, on the other hand, that the work, and as a consequence the publications of these stations, will rise in value until they contain each year a body of doctrine that cannot be neglected by students or by practical tillers of the soil. The obvious suggestion is that at some office of central authority these current reports should be collected, collated and classified.

A periodical statement in condensed form of the conclusions reached at the various stations, if it were accurate and authoritative, could not fail of being useful. For popular reading it should be translated as far as possible into simple language and should be unencumbered with technical details; it should be edited and annotated in such a way that ordinary readers could distinguish and separate what had been actually proved from what was only probable or still in controversy, and the practical bearing of the scientific investigations recorded should be plainly set forth. At a meeting of representatives of the various agricultural colleges and experiment stations held last October, the necessity of some co-ordination of effort among these institutions appeared so evident, that a committee was appointed to consider this among other subjects; but so far as we are advised, no plan for editing the bulletins has been perfected.

The national Department of Agriculture is the natural place where a compilation of this kind should be prepared in connection with the work of its own divisions of chemistry, entomology, pomology, botany, forestry, and mycology. The Commissioner himself should be a man of recognized scientific attainment, or at least he should have such a known appreciation of the value of special training that he would be selected without question as the proper person to organize this bureau for gathering up the scattered and incomplete work of the state stations, for systematizing and unifying it, and for publishing its results in a coherent form. Unfortunately the men who have filled this office could not always be trusted to supervise a labor of this sort; but perhaps the influences which have impelled Congress to create the stations may avail to secure hereafter the selection of a chief who will be accepted by all as equal to every duty imposed upon him. Meanwhile the horticultural, agricultural and other reports are multiplying, and they already contain many papers that students would like to read if they only knew where to find them. Would it be a work unworthy of the Department to have made a full, topical index of all these reports up to date? It would seem that the stores of experience locked up in these volumes was worth enough to justify the trouble of providing a key. Such an index could not fail of being helpful to every one engaged in special research in any direction and in any portion of the field of agriculture, horticulture or forestry.

Balcony Flower Boxes.

A LARGE number of the dwelling-houses in our smaller towns stand far enough apart from one another and far enough back from the street to be encircled by small lawns, by trees and shrubs and flowers. If their owners do not always make the best possible use of the opportunities thus afforded them, still there are few cases in which some desire for beauty is not manifest; and the general aspect of streets composed of such houses is apt, at least, to be verdant and cheerful. But in every town which deserves the name—which is too large to be called a village—we find other streets where the houses stand so close together and so near the street, that, except as they may have yards lying in the rear, no space for gardening remains. The aspect of such streets as these is too commonly dreary and dull in the extreme. The architectural interest, or, at least, dignity, which the streets of a city may have is wanting; and, although a row of Maples may shade the sidewalk, there is nothing to show that the householder has any love for natural beauty or any wish to enliven the prospect for himself and his neighbors. Yet this householder is most often of the class which cannot seek beauty and refreshment by prolonged summer vacations in really rural spots. Winter and summer his home must be here, and it seems a double pity, therefore, that there should be so little to mark to his eyes the difference between the seasons. Surely something might be done to enliven such streets a little, and to give their occupants a small taste of the pleasure which their wealthier neighbors get from their lawns and shrubberies and flower beds.

The only available resource is the cultivation of plants in boxes. But simple and humble though it sounds, it is a resource in which lie possibilities of great improvement for such streets as we have in mind, and of much enjoyment for their dwellers. A few years ago a lady who had lived long in Germany, where the growing of plants in window-boxes is a widespread national custom, found herself established for the summer in the central house of a row of small, ugly wooden houses in a little town near New York. The front stoop descended to the sidewalk, and between the parlor windows and the front railing there was room for nothing more than a narrow balcony and an exiguous strip of grass. But before the summer was over this naked, unattractive house-front was blossoming like a bower. A few Roses had been planted in the narrow strip of grass, a few creepers beside the stoop; from the roof of the porch hung a great basket of trailing plants, and along the top of the balcony balustrade ran wide boxes filled with veritable little thickets of foliage and flowers. The cost had been almost nothing; the labor bestowed had been little indeed; but the result was charming, and the succeeding season bore good results. Not only had many neighbors followed the example thus set, but here and there all through the town could be seen attempts at imitation. Balconies were encircled with flowery boxes, window-sills were filled with them, and even the railings of long piazzas bore them too.

Boxes suitable for such purposes can be made at the most trifling expense of pine-wood, painted to correspond with the house. If the support on which they stand is narrow, additional space may be gained by flaring their sides. Holes for drainage should be pierced in their sides near the bottom, and they should have a layer of potsherds or small stones beneath the rich garden-earth with which they are filled. If the space exceeds five or six feet in length, it is better to use a succession of boxes instead of one long one, as then they may be more easily emptied and removed at the coming of winter, to be kept in a dry place until again required. Plant towards the front of the box such trailers and creepers as will grow to five or six feet, but not more, in length—German Ivy, for example, Tradescantia, Cypress-vine, and, among them plants of Lobelia, Mahernia and the pretty little Convolvulus which seedsmen call *C. minor*. And behind these, which

after a very few weeks will form a deep curtain of waving green across the front of the balcony, plant what you will so long as it will not grow to too great a height nor form too solid a mass of color. What you want is not a mass of vivid Coleus nor of pink and red Geraniums, but a mass of green, with here and there a Geranium or Verbena, or a crimson Coleus and sparks and accents of all bright hues. Not only are the effects thus produced more beautiful, but the danger from thievish boys is less than when a mass of easily picked large flowers attracts their fingers.

Many of the most desirable plants for this purpose can be grown from seed, and the others can be very cheaply bought in pots. The care they require will not extend beyond a gradual thinning out as growth progresses, a little attention to the direction of the trailing shoots, a constant removal of faded flowers, and a daily watering—all of which can be done at odd moments, and with none of the fatigue that attends stooping over garden-beds. For this last reason the cultivation of such tiny box-gardens should be especially attractive to invalids and elderly persons while the beauty they may be made to yield will be doubly valued for being constantly under the eye of those whom household cares keep much within walls.

An appropriation for the establishment and maintenance of a Forestry Station at Dodge City, on the Arkansas River, in the extreme south-western part of Kansas, was made by the last Legislature of that State. Mr. George V. Bartlett, of Ohio, has been appointed director of the Station. Fifty acres of ground, previously prepared by a season's cultivation, has already been planted with the seeds of a great variety of trees, and large numbers of forest and fruit trees have been planted. The results of such experiments, if properly conducted, made in a region where the annual rainfall is insufficient to secure a natural growth of trees, cannot fail to be interesting and valuable. If trees can be made to flourish permanently at Dodge City, without the aid of irrigation, the important facts will be demonstrated that cultivation can be depended on to take, to a certain extent, the place of rain, and that trees, if properly cared for, can be induced to grow in regions which are naturally treeless, owing to natural conditions unfavorable to tree growth. On the other hand, if the trees planted at Dodge City are unable to support the aridity of the Plains, these experiments should go far to prove that a large part of the naturally treeless region in the interior of this Continent must, even under favorable conditions of cultivation, remain forever treeless. Mr. Bartlett has a problem to solve of great public importance, and the results of his experiments will be watched with interest.

Climate of the Prairies.

IN a paper read before the American Pomological Society at Grand Rapids, Michigan, on "Hard Problems in Pomology," I said: "Year after year since 1856-7 our lists of fruits, shrubs and trees for general culture have been revised by the active horticultural societies of the Prairie-States, yet to-day the northern half of Iowa and Illinois, and the southern half of Minnesota and Wisconsin, can show more dead or crippled trees and shrubs than has been known in the world's history at any one time."

The real causes of this general wreck of trees and shrubs listed as "hardy" east of the lakes do not seem to be well understood. The common impression at the east seems to be that our orchard troubles are caused by winters far more severe than are known in any part of New York.

In reality our mid-continental extremes of heat and moisture of air during summer and autumn have most to do with the health and longevity of our ligneous plants. When our first settlers built their cabins on the borders of our isolated groves and river timber-belts, they could not fail to notice the absence of the Mosses, the Laurels, the Rhododendrons, the Conifers, and the plants generally of

more humid and equable climates, and they soon learned that our extremes of moisture and temperature presented new problems in plant and tree culture.

As early as 1856-7 the stories of dead and dying trees were told over a large part of the west, but a careful comparison of notes will show that many varieties of the orchard-fruits, and of ornamental trees and shrubs, which endured perfectly the extremes of rainfall and of atmospheric changes in the early days, are now placed in the tender list. The reasons for this apparent increase of climatic rigors of which our early settlers complained is beyond all doubt due to changes wrought by man.

As stated by Bryant in his work on Forest Trees, the primitive prairies were covered with so dense a growth of grass, that on the lower levels it could be tied over the head of a man sitting on horseback, while sloughs, marshes and drainage-centres were clogged, and the primitive timber of the streams presented real forest conditions. The whole country was in condition to hold the June rains and give them off gradually to the summer air.

At that time we were subject to variations of rainfall ranging from 74½ inches in 1851, to 23½ inches in 1854, but the prevailing westerly winds of such dry seasons as that of 1854 were never known to "fire" the blades of corn, to curl and burn the leaves of fruit trees, or to prevent the deposit of copious dews at night, as they passed over a vast stretch of clothed plain that modified the intensity of their heat, and left a part of the moisture they contained.

Since that time man has wrought changes in the whole aspect of the country.

A section large enough to make several such kingdoms as are found in western Europe has been turned with the plow, the surfaces of sloughs and marshes have been bared by clearing away the timber and hardened by drainage. During the droughts of 1886 and 1887, our prevailing winds from the west and south-west during the growing season have passed over a relatively dry, heated plain which has drunk up their moisture with avidity and raised their temperature to a degree not known thirty years ago.

Possibly these climatic evils, as Bryant says, may be "mitigated and perhaps wholly removed by planting a due proportion of the country to forest trees," but in the meantime we cannot wonder that we cannot grow some of the field crops and many of the varieties and species of trees and shrubs that thrived with us thirty years ago. Yet eastern readers must not get the impression that we have an approach to desert conditions. The extreme seasons we speak of, with light rainfall, extreme heat and aridity of air, followed by cold dry winters, that are so fatal to the larger part of the orchard fruits, ornamental trees and shrubs grown at the east, visit us at rare intervals and do not materially affect our agricultural interests when the general results of periods of from five to ten years are considered.

And even these extreme years permit almost perfect success in growing the small fruits, the grapes, our native plums, and such orchard-fruits as can endure the extremes of heat, aridity, and temperature of our summer and winter climate, as well as our native forest trees.

We succeed with the small fruits, the grape and the plum because they are native to our soil and climate. We fail to grow successfully the small fruits, grapes, apples, pears, cherries, forest trees, ornamental trees, shrubs, etc., of western Europe, and their seedlings originated in the States east of us, for the reason that in leaf, bark, and character of cell structure of wood they do not meet our climatic requirements.

But all this does not prove that in due time we shall not conquer the situation by the introduction of the orchard fruits of climates similar to our own.

We have already a great number of varieties that stand every extreme as well as our Box Elder. If with farther trial they do not come up to our standard of excellence in quality, we can rapidly change them by crossing and

by selection. We may not materially modify our climate, but we can and shall adapt plants and trees to it as has been done in similar climates of the old world. At another time I will attempt to give some of the peculiarities of leaf, bud, bark and wood, of the ligneous plants that bid defiance to prairie-winds and weather.

J. L. Budd.

Fungus Diseases of Insects.

IF the subject of injuries done by insects to plants of various kinds is of interest to horticulturists, it is, as a matter of course, interesting to know about the fungus parasites which destroy the insects themselves. Every one has noticed the white fungus which attacks and kills large numbers of house-flies in the summer and autumn. A good deal has been written on this fungus in a popular way, and its specific name, *Empusa muscæ*, is probably not unfamiliar to many of our readers. The species belongs to the order *Entomophthorææ*, which has been but little studied in this country, and an admirable monograph on the subject, by Mr. Roland Thaxter, published in the Memoirs of the Boston Society of Natural History, contains a great many facts of interest even to those who are not in the strict sense botanists.

Only three species of *Empusa* had been known hitherto in the United States: *Empusa Muscæ*, which kills house-flies; *E. Grylli*, which causes epidemics in grasshoppers; and *E. sphaerosperma*, on the clover-leaf weevil. Mr. Thaxter describes 26 species of *Empusa* in the United States, 15 of which are new to science, and, so far as yet known, peculiar to this country, and 8 which occur in Europe, but not before recognized here. The insects attacked were species of several orders, flies, gnats and other *Diptera* being most frequently, and *Neuroptera* (dragon-flies) the least frequently affected. Besides the species of *Empusa*, Mr. Thaxter gives descriptions of a related form previously known on the seventeen-year locust, and a curious form on the excrement of frogs, not before found in this country.

The *Empusæ* have two forms of reproductive bodies, some found on the surface of the insects attacked and others in their internal organs. The nature of the latter has not been very well understood, but the facts stated by Mr. Thaxter form an important supplement to what has previously been written on this point, and it is now plain that this group of insectivorous fungi should be classed not with the white moulds which produce disease in fishes, such as the salmon mould, but rather with the common moulds which flourish on various articles of food in all houses. The discovery of so large a number of fungi of the genus *Empusa* which attack a surprisingly large number of species of insects, and the accurate knowledge of their habits and mode of reproduction, recently obtained, would lead us to believe that, at no very distant day, it may perhaps be possible to check the increase of some injurious insects by artificial propagation of the *Empusa* which prey upon them, and, under suitable conditions, destroy them.

W. G. Farlow.

Foreign Correspondence.

London Letter.

THE most valuable Orchid which received a certificate at an April meeting of the Royal Horticultural Society, was a variety of *Odontoglossum crispum*, from Mr. Charlesworth, an importer at Bradford. It has very large and finely shaped flowers, the petals and sepals exquisitely crisped and almost wholly covered with bright reddish brown blotches. It is the finest variety that has been exhibited this year, and will take equal rank with *Veitchianum*, *Sanderianum* and others. It is known as Charlesworth's variety. An Orchid somewhat similar to the striking *Odontoglossum Rossii*, var. F. L. Ames, already described, is *O. Humeanum*. It is supposed to be a natural hybrid between *O. cordatum* and

O. Rossii, and was considered worthy of a certificate, inasmuch as it is pretty and distinct from other varieties. It does not differ much in growth from the typical *O. Rossii*, but the form of the flowers and their color is different, the lateral sepals being a pale lemon yellow, with reddish brown blotches at the base, the other sepals coffee-brown, the lip pale yellow, crest yellow, and column purple. It is a good deal like one called *O. aspersum*, and, in fact, may prove identical with it. Though not a new Orchid, *Angraecum arcuatum* received a certificate, apparently because of its rarity. It cannot be called a first-rate Orchid, many species of *Angraecum* being much more showy. Its flowers are white, borne in short spikes and sweetly scented. It is quite a specialist's plant, and certainly did not merit a certificate in comparison with the others shown. The greatest novelty among Cattleyas that has been seen this year is a form of *C. Trianae* named *Courtauldiana*. It is a good deal in the way of Backhouse's variety, but more remarkable. The flowers are above the average size and of good form. The sepals and petals are pale pink, heavily barred with the richest carmine crimson down the centre of each petal; but the bars are made up of freckles and spots, and not of one heavy dash, as in Backhouse's variety. The lip, too, is very rich in color, so that altogether it is a remarkably showy Orchid. It cropped up out of an importation and was first exhibited by Mr. Courtauld (an Orchid grower in Essex) at the great international show at Ghent. Orchid novelties just now are not as plentiful as they have been. The chief demand is for new Cypripediums and every nurseryman is searching for them. I lately saw a handsome new hybrid in Sanders' nursery named *C. Lemoinierii*, which may be best described as bearing resemblance to *C. caturum*, also a hybrid of the *Sedeni* type. But *C. Lemoinierii* is a much finer plant, more vigorous in growth, with larger flowers and more richly colored, the tints being of a bright reddish pink. This, too, was exhibited in Ghent, and was the admiration of the Continental Orchidists, who are also infected with the Cypripedium mania.

London, April 22d.

Wm. Goldring.

A Garden in Shanghai.

IN this place it is an easy task to transform a flat, dreary-looking piece of ground into a flourishing garden filled with a great variety of flowering shrubs. The country for miles around has been made by the silting up of the Yangtze River. About three hundred years ago the sea washed against the walled city of Quinsan, which is now thirty miles inland from here, rising from the plain like a miniature mountain, topped by its picturesque pagoda and left far away from any intercourse with foreign civilization. The alluvial plain for one hundred and fifty miles about Shanghai formed from the siltings from the Yangtze River gives strong nourishment to all shrubs and other plants; the dampness and great heat act as a forcing-house, and they grow as if by magic.

Before beginning to plant a garden the land must be raised several feet by making artificial ponds, the excavated earth serving as an excellent fertilizer, and around the ponds there is room for landscape gardening in miniature. At a short distance out in the country good grass sods (of a species of *Poa*) are found, and these, well laid in November, will give a beautiful lawn the following summer, if rolled and cut once a week, always leaving the cuttings, which serve the two-fold purpose of protecting the roots from the sun and of enriching the ground. Special care must be taken to keep out the Bamboo Grass and Clover, both of which grow rapidly and soon kill out the grass; but the expense of doing this is moderate, as small coolies are to be had for fifty or one hundred cash a day, the equivalent of five or ten cents.

The approach to our garden is through a pretty lane bordered on either side by *Ligustrum lucidum*, real Privet, which makes with its deep green leaves a good hedge, if constantly clipped, otherwise it grows into small trees from fifteen to eighteen feet high, which when in flower fill the air with a heavy, sickening odor. The entrance is through an archway made by two old Willows, whose lopped branches serve as a trellis-work about which a *Wistaria* winds itself with a python-like embrace, and every spring sheds a lilac-colored veil over these skeleton trees. Such is the profusion

of the flowers, that in time the weight of the creeper will break down the tree.

Near by are Locusts from seeds sent more than twenty years ago from the United States. They have flourished well. In spring the trees are bent with the graceful clusters of white flowers.

Stiff *Yuccas* growing in clusters from the same stem; fan-shaped Palms (*Chameroops humilis*); Bananas, not strong enough to bear the hard frosts without a straw covering; Cannas, which make themselves comfortably warm underground and spring up fresh every year—all these, with a background of *Pittosporum Tobira* and *Ilex cornuta* or Chinese Holly, with its horn-shaped leaves, give a variety of green coloring most restful to the eye during the blazing heat of summer.

The so-called Rose of Sharon (*Hypericum calycinum*) grows in profusion, covered with golden blossoms, and close at hand are several varieties of Gardenia, loading the air with strong perfume from their pure white flowers. English Ivy, Japanese Honeysuckle, Clematis (commonly called Passion-flower), *Bignonia Sinensis*, and several Roses, among them the Banksia, introduced into England from China many years ago, the Gloire de Dijon and Yellow Tea, are among the hardy creepers, but the lovely Moon-plant, a kind of exaggerated *Convolvulus*, with its perfect white disk-shaped flowers, droops at the earliest frost. Its seeds must be sown in March, and the seedlings kept under glass until June, for it belongs to the tropics. On first flowering, the long, spiral buds unfold as the sun goes down, closing before sun-rise and ending their ephemeral existence; later on, as the days become shorter and cooler, the flowers keep open during the morning.

Skirting the lawn are fine Fir trees, and the Cypress, always graceful, whether in the russet coloring of winter or when the soft spring air is calling forth its young, light green tips. The Tallow tree (*Stillingia sebifera*) colors its heart-shaped leaves with bright tints in autumn, and these, with the golden tones of the *Salisburia adiantifolia*, or Ginkgo tree, give a slight suggestion of New England October scenery. However, this home-dream vanishes as the eye falls on a cluster of feathery Bamboos, on the Fragrant Olive the Kwei-hua of the Chinese, and on the *Eriobotrya Japonica* or Loquat, with wool-covered flowers, made lovely only when the branches are bending with clusters of yellow fruit. These shrubs are over-topped by the *Melia Azedarach*, a good-sized tree, commonly called the Pride of India, which has fine heliotrope-colored blossoms in clusters. Below this is the *Magnolia grandiflora*. Much more stately and far prouder it looks with its glossy dark leaves and rich, large, creamy flowers.

On one side of the pond is a tangled copse filled with Privet (*Nandina domestica*), Rose of Sharon, *Pittosporum*, Palms and Bamboos, of which last there are sixty-three chief varieties in China. They are more valuable to her than her mines, and yield, next to rice and silk, the largest revenue.

There is no month in the year when some shrub may not be found in flower; for, although the range of the thermometer is great, reaching the high nineties in July and August, and falling to twenty-two and lower, often giving twelve degrees of frost, Fahrenheit, for several days at a time, still the cold is soon tempered by the force of the sun, which has been known to produce sunstroke in February; a rare occurrence, however. During the early winter months, large feathery branches of the Heavenly Bamboo, with brilliant bunches of scarlet berries drooping from the slender stems, are hawked about the streets. These are followed by Cherry and Almond blossoms. The Edgeworthia or Yellow Daphne decks its stiff, bare, brown stalks with soft yellow flowers before the frost has gone, and as the spring comes forward the *Magnolias* burst into bloom.

Photina serrulata, with its young red leaf-buds unfolding from amid the old, dark, evergreen leaves, gives the effect, at a distance, of a flowering shrub. *Daphne odora*, brought here from the hills at Ningpo many miles to the south, flourishes well, but must be protected from the scorching summer sun, as well as from the strong north-west winds. This is easily done by planting it on a bank which faces east and amid taller shrubs and trees. The flowers of the Peach, of the great Magnolia, of Althœa, and of the Albizzia, with fluffy pink blossoms, follow in quick succession; and before these have faded Gardenias and the Fragrant Olive are in bloom. After which winter is approaching, and again the *Nandina domestica* is to be seen.

Tulips, Hyacinths, Sweet Peas, Mignonette, Pansies, Salvias, Hollyhocks, Sunflowers, Zinnias, Canterbury Bells, Nasturtiums, Phlox—in fact, all garden flowers from the United States and Europe—have been introduced; many, however, must be treated in rather a reverse method from that usually employed on the other side of the planet.

Tulip and Hyacinth bulbs should be planted in October, and not left in the ground later than June, otherwise the rain and heat will rot them. Sweet Peas thrive best in large tubs, the seeds sown in September for spring flowering. The seeds of Canterbury Bells sown in the spring make a few leaves during the first summer; afterwards they may be transplanted in the autumn, and the following spring they are in perfection.

Mignonette does better in pots, although it will flower for a short time in the open before the damp heat comes.

The glaring red *Salvia* is well suited to endure the summer heat. This, planted out in the spring, comes to its greatest beauty in October, notwithstanding it had been in flower throughout the summer.

Each year new flowers are to be found in the different gardens; but the great question is, what will best stand the mid-summer heat on this alluvial plain?

My experience shows that different varieties of Japanese Lilies are more satisfactory, and are grown with less trouble than other flowers during the damp heat of June, July, August and September, giving a succession of flowers during these months.

Shanghai, February, 1888.

J. E. L.

New or Little Known Plants.

Heliconia Choconiana.*

IN discussing a proposed trip to Guatemala in the spring of 1885 I was told of wild Bananas and wild Pineapples as growing in the forests of that region, and I was curious to learn what they might in reality be. The true Pineapple is indeed found there growing by the roadsides and in fence-corners, where the discarded crowns of devoured pines have taken root, and do their poor best to bear fruit again. But the so-called wild Pineapple I found to be the *Bromelia Pinguin*, which is planted for hedges and bears an edible berry. The "Bananas" were all species of *Heliconia*, of which I saw a considerable number growing on river banks, and in other damp places. Some were chiefly notable for their conspicuous inflorescence, formed of large brightly-colored bracts in close double ranks and enclosing the clustered flowers. Others were taller, with very large leaves and a decidedly Banana-like habit, but their resemblance to the Banana goes no farther and the fruit is never eatable.

Several of these were common on the banks of the Chocon River, but that which pleased me most was one with numerous smaller, bright green, and glossy leaves, which I discovered in a deluge of rain, and of which I afterwards secured the roots. This has recently bloomed in Cambridge, and appears to be a previously unknown species. The top of a stem and a single leaf of the natural size are here figured. (See page 162.) The clustered stems grow to a height of three or four feet, and are covered with the sheathing petioles of the apparently sessile leaves. The inflorescence is nearly sessile at the summit, declined, and consists of about half a dozen large, scarlet bracts, each enclosing a fascicle of long, pale yellow flowers. The segments of the triangular perianth are mostly coherent, only one of the sepals separating sufficiently to set free the anthers and the style. The fruit is about the size of a pea, roundish and truncate, three-celled and three-seeded, but indehiscent.

S. W.

Cultural Department.

A List of Roses.

FOR those who care to cultivate but a few Roses and are not familiar with the many varieties now offered, the list below is given as embracing the best of the several types in commerce to-day. Of course there are many more varieties of almost equal merit which could be added to this list, but the difference between many of them is so slight that only an ex-

* *HELICONIA CHOCONIANA*, Watson, Proc. Am. Acad., xxiii. 284. Glabrous throughout, the stems sheathed with numerous leaves; blades of the leaves sessile on the sheaths, narrowly oblong-lanceolate, six to ten inches long by two wide, acuminate, shining; inflorescence deflexed, shortly pedunculate; spathes scarlet, lanceolate, two inches long, the lower empty and leafy tipped; flowers yellowish, equalling the spathes, the lower sepal free, the lateral connate with the petals; sterile stamen short, ovate, abruptly acuminate.

pert could distinguish them when blooming together. Those enumerated below are all distinct representative Roses. All are fragrant and all are more or less continuous bloomers, for while among those classified here as hardy the Hybrid Perpetuals are not strictly speaking continuous bloomers, yet with liberal treatment, as described in the last issue, they will reward the owner with some fine flowers at intervals all summer. Those described as tender—including types of Tea, China and Bourbon Roses—will, if carefully attended to, give flowers the whole summer from June till late October in the latitude of New York, and in all sections south of that line. In more northern parts of the country the season is somewhat shorter.

Do not be induced to try small plants if you want them to bloom in the open air the first season. For this purpose only good fair-sized plants can be depended upon. Many lovers of Roses have been discouraged because this precaution was neglected. It is a waste of money to buy cheap, small plants. By the time such plants have fairly started to grow October, and frosty weather overtake them, and a very few flowers of poor quality is the only reward for a summer's work and waiting. Procure strong plants and on their own roots if possible. Budded plants often throw up suckers from below, and the inexperienced are in many cases not able to detect the difference between the two until the finer kind is weakened and ruined by the more robust growth from the stock.

The following are hardy:

WHITE.—Coquette des Blanches, Columbia (new).

PALE SHADED PINK.—La France, Madlle. Eugène Verdier, Queen of Queens.

CLEAR PINK.—Madame Gabriel Luizet, Mrs. John Laing.

ROSE COLOR.—Anna de Diesbach, John Hopper.

BRIGHT RED.—General Jacqueminot, Ulrich Brünner.

DEEP VELVETY RED.—La Roserie, Jean Liabaud.

Of tender varieties, the following stand our trying summers remarkably well and give as much satisfaction as any I have tried.

WHITE OR FLESH COLOR.—Madame Joseph Schwartz, Marie Guillot, Malmaison.

YELLOW.—Coquette de Lyon, Etoile de Lyon.

PINK, OF VARIOUS SHADES.—Marquis de Vivens, Grace Darling, Edmund de Biazant, Duchess de Brabant (improved).

RED OF DIFFERENT SHADES.—Meteor, Queen of Bedders, Queen's Scarlet or Aggripina, Pierre Guillot.

Summit, N. J.

John N. May.

Polyanthuses.

THESE are variously colored florist's flowers that bloom in loose umbelled heads, and with flowers of all shades of white, yellow, rose, purple, maroon and crimson. While they can be grown successfully as hardy border-plants by protecting them with a light covering of evergreen branches or forest leaves in winter, it is only when treated in winter as cold-frame plants that they can be reasonably expected to flower in profusion and perfection from March till the end of May. They are useful as cut flowers in the same way as Pansies or Forget-me-nots, and they always appear more attractive when their own leaves are used as the green accompanying them.

They are true perennials, and in order to perpetuate special varieties we must treat them as perennials and increase them by division. A common way of treating them is to lift, divide and replant in some cool, moist spot out-of-doors as soon as they have done blooming, leaving them there till next fall, when they can again be lifted and replanted in cold-frames. But this is bad practice in one particular. I always have had the best success with Polyanthuses when divided in fall, and not in early summer.

Still, we now get such splendid varieties from seed, and so easily, except in the case of uncommonly choice sorts, that it is hardly worth while to bother with them as perennials, and it is better to treat them as annuals. Seeds sown now, or any time before August, should give capital plants for blooming next spring.

There are two distinct kinds of Polyanthuses—namely, the gold-laced, and the large-flowered, showy varieties. The gold-laced are beautiful flowers, with dark, velvety brown, maroon or crimson blossoms, whose petals are richly bordered with a distinct golden edging. The large-flowered varieties are the most robust, profuse, showy and useful, and include all the shades of white, yellow, rose-purple and crimson found in the race, and from a packet of choicest mixed seed we may get some of each sort. But as mixed seed does not give the best quality of flowers, it is better to buy the colors separately, say

a packet of white, one of yellow, one of dark crimson and one of spotted. This gives us a fine assortment, and among hundreds of plants, especially of the dark-colored ones, barely two are alike. Never buy inferior seeds, no matter how cheap they may be. If your object is to have fine flowers pay a good price for seed, and get the very best obtainable. The care in sowing, growing, wintering and blooming poor Polyanthuses

lath shading. But it is better to delay planting into frames until August, as the crowns are apt to grow too large to admit of blooming them at the regular distance—nine inches apart. And it is only as a matter of practical convenience that they are sown in spring; it is better to sow in June, and from the time the seedlings come up till winter sets in to keep them in active growth. They make just as good blooming plants for



Fig. 31.—*Heliconia Choconiana*.

is just as great as that required with the very choicest strain.

Sow Polyanthuses in boxes in a warm green-house in March or April; when they are up nicely prick them off into other flats, and about the end of April remove these to a cold-frame. After spring planting is over, say early in June, replant them into other boxes, and summer these in a cool, somewhat shady place, or transplant at once into a cold-frame, and shade with

next spring as do earlier sown seed, and they escape red spider, the inveterate enemy of old plants in summer.

Polyanthuses love a rich, friable, loamy soil, with a free supply of rotted cow manure, and during their whole life they should be liberally watered. During the winter months protect them in the frames with sashes and a little straw shaken over the glass. It is better to have the ground frozen about an inch

deep before covering at all, then aim to keep it frozen till February or March. So long as the ground is frozen we need not uncover or ventilate in winter.

Apart from blooming them in frames, we can use them effectively in out-door gardens. As soon as the frost is out of the ground lift the plants from the frames and plant them out in beds, borders or elsewhere in the garden in the same way as Crown Anemones, Forget-me-nots, Daisies and Pansies, and they grow and bloom beautifully. In this way they are extensively used in the Boston gardens.

William Falconer.

Viola cucullata.—We all admire the common blue Violets, so vigorous and abundant in bloom in moist meadows and rich woods in April and May, but it should be more generally known that they are excellent garden plants. They live and thrive in garden borders year after year, and that too in open sunny places, quite unlike the situations in which we usually find the wild plants. And like most other wild plants that enjoy a place in the garden, where they bloom more abundantly and form larger plants than in the meadow or wood. Besides the many shades of blue we find in this Violet, we have forms with pure white flowers and others variegated with white, and the two last are the favorites in gardens. In the woods and meadows hereabout, and between here and Oyster Bay, the variegated varieties are found in the greatest abundance, and the markings differ in almost every plant, indeed among these wild plants are more beautifully variegated forms than are ever seen in cultivation. Among the wild plants, too, are a great variety of cut-leaved forms, but these, for garden purposes, are less desirable than are the simple leaved ones. We have these Violets in full bloom now in our garden borders, and they are lovely companions of Siberian Columbine, Moss Pink, Virginia Lungwort, Golden Alyssum (*A. saxatile*), Siberian Corydalis (*C. nobilis*) and other beautiful seasonable flowers. If amateurs will now go into the meadows and dig up some clumps of these Violets, plant them in their gardens, and give them abundance of water for a month to come, they will soon be established and take care of themselves, and next spring repay this kindness with a profusion of blossoms. In digging up wild plants dig deep, and secure as many roots as possible; the mat of sod around the neck of the plants is only grass roots, the Violet roots go deeper than these. Never let them wilt between digging and planting.

W. F.

Tulipa Kaufmanniana is another of the fine Tulips discovered by Dr. Albert Regel in central Asia. It is a native of the mountains which rise above the valley of the river Tschirtschik and has lately been introduced into cultivation through the St. Petersburg Garden. It is allied to *T. Gesneriana*, and like that species is variable in the color of the flower, which ranges from different shades of red and yellow to white. In the form which Dr. Regel considers the type and has named *albo-variegata*, the segments of the flower are a bright rosy carmine on the outside, delicately streaked with white on their interior face, the claw brightly flushed with orange yellow within and less conspicuously marked with the same color on the outside, this marking on the outside of the outer series being reduced to a pale straw colored blotch. The leaves are oblong-lanceolate, five or six inches long by an inch broad, smooth and glaucous. The stem is about one foot high, and bears a single flower, an inch and a half to two inches long. It springs from a small ovoid bulb an inch in diameter, with brown membranous tunics slightly pubescent on the inside. *Tulipa Kaufmanniana*, var. *albo-variegata*, is a handsome and very hardy and desirable garden plant, flowering among the very earliest of the Tulips. It demands no special cultivation or care, and increases rapidly.

C.

Boston.

Cereus grandiflorus.—We have a large plant of this grand species growing in a rose-house, where it blooms lavishly every year, usually in May. In the event of bright warm weather the flowers open about sundown, but in the case of dull weather it is generally dark before they expand. According to the weather and the condition of the buds we can tell, a day or two ahead, the night when the flowers will open, and acting on this, can in the forenoon cut off the buds, which if left uncut would bloom that night, and send them to our friends. These buds will open and exhale their delicious fragrance nearly as well as they would if they had been left on the plant. The flower buds before they open have no fragrance; after opening, while they are somewhat fragrant all the time, their powerful odor is so intermittent—that is, it comes in puffs, as it were.

E.

Rose Princess Beatrice.—I consider this new Tea Rose among the most charming of all Roses, and finer blooms could not be grown in the height of summer than those now seen here. The form of the flower is exquisite, the petals broad and of thick substance, and recurved in the same pleasing way as in La France. The color of outer petals is pale primrose, which towards the centre deepens into a warm apricot. The scent is strong and the foliage broad, of a luxuriant deep green, which contrasts with the ruddy-tinged twigs and leaf stalks. It is evidently first-rate for forcing into early bloom. I call it new because it is not much grown yet, though Mr. Bennett, who raised it, obtained a first-class certificate for it from the R. H. S. in June, 1885.

Odontoglossum Harryanum.—There is quite a flutter among the orchidists about London in regard to this new Orchid since it has been rumored that some extraordinary varieties have been flowered, and others are likely to crop up. Mr. Harry Veitch has in flower a wonderful variety received from one of his correspondents. It measured nearly four inches from top of dorsal sepal to tip of labellum. The broad petals and sepals were of a peculiar shade of olive green and bronze, while the broad labellum was pure white, adorned with blotches and pencillings of a bright carmine. It is a long time since I saw an Orchid that captivated me by its beauty so much as this flower, and I know no other Orchid to compare with it.

W. G.

The Rock Garden in Spring.

THE handsomest flower in the Rock Garden this week is the Turkestan *Tulipa Greigi*, one of the most showy of all the Tulips. It is a dwarf species, bearing four glaucous-green leaves, of which the two lower are oblong-acute, five or six inches long by two and a half wide, the two upper narrowly lanceolate. They are conspicuously marked on the upper side with numerous oblong and linear bright chestnut-brown blotches, and are undulated on the margins. The stout, downy flower-stem is rarely more than two or three inches high. It bears a single campanulate flower, three to four inches deep, the segments spreading abruptly above the middle when fully expanded. The upper portion of the segments are bright crimson within, the lower third occupied by a large black blotch, surrounded by a distinct yellow border. This splendid plant, although apparently perfectly hardy, is a failure here in cultivation. Imported bulbs flower finely the first year after planting, but then gradually diminish and finally disappear. It is possible that they might give better results if they were lifted and replanted every year. Much more satisfactory, although a less showy plant, is *Tulipa Oculis-solis*, a native of Southern Europe, and for centuries known in gardens. It has three or four light glaucous leaves, a rather tall flower-stem and very handsome campanulate flowers, with acute, deep-scarlet-colored segments, two to three inches long, and, like those of *T. Greigi*, conspicuously marked on the inner side with a large black blotch surrounded with a yellow margin. This is one of the most beautiful of the perfectly hardy Tulips which can be grown here.

Several Fritillarias are now in flower. The Guinea-hen flower (*F. Melcagris*), a widely distributed European plant from Great Britain and Norway to the Caucasus, with large, pendulous, bell-shaped solitary flowers, checkered with dark purple, and borne on slender leafy stems a foot high, is an excellent and very hardy plant here, although now too rarely seen except in very old-fashioned gardens. It is a useful plant, too, for naturalizing along wood-walks and in other wild parts of the garden. There is a variety with dull-white flowers.

A handsome and very distinct hardy species is *Fritillaria pallidiflora*, introduced a few years ago from southern Siberia. It has large pale yellow, nodding, campanulate flowers conspicuously marked on the inside of the segments with small purple spots, and numerous glaucous-blue, lanceolate leaves. It is a vigorous and valuable plant, eight to ten inches high, and is now blooming in the same spot where it has stood undisturbed during the last five or six years. Every one who has ever been in a garden knows the stately old Crown Imperial (*Fritillaria imperialis*), with its whorl of red-brown, drooping flowers at the top of the tall leafy stems. It is a native of Persia, and has been cultivated in gardens during nearly three centuries. There is a variety (var. *lutea*), however, with clear yellow flowers which is rarely seen, in this country at least, although far more beautiful than the old-fashioned variety. It deserves more attention than it has received here.

The Summer Snowflake (*Leucoium astivum*) is in bloom. It is a very hardy bulbous plant, a native of central and



A New Jersey Pine Forest.—See Page 166.

southern Europe, and one of the handsomest and most satisfactory plants of its class in the rockery. It has dark green, linear, obtuse leaves, one to two feet long, and tall slender scapes, bearing at the summit a cluster of four to eight pure white, nodding, bell-shaped flowers, nearly one inch long, the tips of the segments marked on both sides with a green blotch. The Summer Snowflake will thrive in ordinary garden soil. The deep blue and the white flowered varieties of the Grape Hyacinth (*Muscari botryoides*) are in bloom. They are hardy little bulbous plants, from central Europe, with very short, dense racemes of small, nodding, bell-shaped flowers, and

linear, erect, glaucous leaves. They are well suited for the wilder parts of the rockery, and for naturalizing along the margins of woods and wood-walks.

Several native plants now in bloom are worth mention as interesting inhabitants of the rock-garden. The Moss Pink (*Phlox subulata*), a conspicuous feature in early spring on rocky hills in some parts of New Jersey, is common and well known in gardens; but *Phlox reptans* is seen more rarely. It is a dwarf species, with long and prostrate, creeping, runner-like stems, sending up low flower-stems, six to eight inches high, bearing a few-flowered cyme of handsome reddish

purple, long-tubed flowers, nearly an inch across. It is a native of damp woods along the Alleghany Mountains from Pennsylvania to Kentucky and Georgia. It is a hardy and desirable plant in cultivation, flourishing alike in shade and in full exposure to the sun, forming a dense, carpet-like mat. It is a good plant to use in covering the ground among shrubs in the rock garden, and is very easily increased by division.

The Twin-leaf (*Jeffersonia diphylla*) is a perennial, glabrous herb of the Barberry family. It sends up in early spring long, petioled leaves, divided into two half-ovate leaflets and naked one-flowered scapes. The handsome flowers are white, about an inch across, and are composed of four deciduous sepals, eight oblong, flat sepals, eight stamens, a two-lobed stigma, and an ovoid, pointed ovary. The pear-shaped pod opens horizontally near the middle, the upper part making a sort of lid. The Twin-leaf is an inhabitant of rich woods from western New York to Wisconsin and southward. It is attractive in foliage as well as in flower, and will flourish in any garden border. It is easily increased from seed, and by the division of the matted, fibrous roots. The genus *Jeffersonia*, of which a second species occurs in Manchuria, was named by Dr. Barton in honor of Thomas Jefferson.

The Mitre-wort (*Mitella diphylla*) is a common inhabitant of northern and western woods, where it is found in upland situations in deep rich soil. A mass of this graceful little plant is a pretty object in the shadiest part of the rock garden, where it throws up its tall, slender racemes of small, white flowers, before the leaves on the over-hanging trees appear. It has hairy, acute, heart-shaped, lobed and toothed, pale yellow-green leaves. The slender scape bears near the middle a single pair of small, opposite, sessile, acute leaves—a character from which the specific name of this species is derived. The Purple Trillium is a less showy and less attractive plant than *Trillium grandiflorum*, referred to in the last issue, but it is worth a place in the shaded rockery for the peculiar deep, dark, dull-purple color of the large flowers. It is a very common plant in rich woods, especially at the north.

The Canadian Violet (*Viola Canadensis*) deserves a place in every garden. It is a beautiful plant, with leafy stems, one or sometimes even two feet high and with white flowers tinged with violet. It is common in northern woods and on the Alleghany Mountains, and takes kindly to cultivation, springing up from self-sown seed in the shade and in the most sunny and exposed parts of the garden.

Boston, May 13th.

C.

Notes From the Arnold Arboretum.

Ribes saxatile is the earliest of the Currants in flower. It was the first shrub in the Arboretum to unfold its leaves. A native of Siberia and long known to botanists, it is not often found in gardens. *R. saxatile* is a very distinct, hardy, free-blooming shrub, two or three feet high, with erect branches covered with scaly reddish bark, and leaves, when the plant is in flower, of a delicate pale yellow-green color. The small yellow flowers are produced in short erect racemes. The fruit is small, spherical, bright red, acid and hardly edible.

Ribes alpinum, a red-fruited Currant common in the elevated deciduous forests of northern and central Europe, and of Russian Asia, where it sometimes forms a dense undergrowth, blooms here a few days later. It is a dwarf unarmed shrub, two to three feet high, with broadly ovate, serrate, lobed leaves and erect glandular-pubescent racemes of small flowers and large, handsome scarlet insipid fruit. This plant from a horticultural point of view possesses little interest except in the fact that it is one of the few hardy shrubs that will flourish under trees in a comparatively dense shade.

Two species of *Ribes* from our northern woods are also in flower—*R. rotundifolium*, with smooth or sometimes downy, round, heart-shaped, lobed leaves, slender peduncles, each bearing 1 to 3 small greenish flowers, and small unarmed fruit of agreeable flavor. The second species is the Fetid Currant (*R. prostratum*), with long, prostrate, unarmed stems trailing over the ground, deeply heart-shaped, lobed, doubly serrate leaves, and small greenish flowers borne in slender erect racemes. The pale red fruit is glandular bristly. The habit of this plant would give it a considerable garden value, in spite of the disagreeable odor it emits when bruised, were it not for the fact that when removed from its home in cold damp woods to more exposed and sunny situations, its leaves become disfigured by a fungus early in the season and often drop by mid-summer.

Ribes aureum, the Buffalo or Missouri Currant, of which several garden forms of no special interest are now cultivated,

is in flower. It is a tall, glabrous, unarmed and very hardy shrub, 6 to 8 feet high, common from western Missouri to Oregon, with three-lobed leaves and bright golden-yellow flowers in many-flowered racemes. The yellow fruit, which turns brown or nearly black when fully ripe, has a pleasant but rather insipid flavor. This is one of the hardiest and most easily grown of all shrubs; it will thrive in poor, sterile soil and under the shade of trees; situations where it is often difficult to make shrubs flourish. But the handsomest species of the collection and perhaps the handsomest of the genus is *Ribes sanguineum*, a native of Oregon and northern California, where it is common on the rocky banks of streams. Like nearly all the woody plants from that region it is not thoroughly hardy in New England, and must be carefully covered to protect the flowering wood. It is an unarmed shrub 4 to 8 feet high, with heart-shaped, five-lobed, serrate leaves and long drooping racemes of deep rose-colored flowers in the axils of large red bracts. The fruit is sub-globose, glandular, hirsute and unedible. Several varieties of some horticultural interest have originated in gardens, of which the most distinct are the var. *atrorubens*, with smooth, deeper colored flowers, and the var. *malvaceum* (*R. malvaceum*), with leaves hispid above, covered below with white tomentum.

Two Bush Honeysuckles (*Xylosteum*) of our North Atlantic Flora, *Lonicera ciliata* and *L. carulea*, are flowering. The former is a delicate and pretty shrub, which inhabits rocky woods from Massachusetts to Wisconsin and far northward. It sometimes attains a height of 5 feet, with erect or straggling branches, oblong-ovate leaves on slender petioles and rather large greenish-yellow flowers, produced in pairs on long single, axillary peduncles. The berries are red. *L. carulea* is a dwarfier plant rarely exceeding two feet in height; it is found in bogs from Rhode Island to Wisconsin and northward. It has oval leaves, pubescent when young, pale yellow flowers on short peduncles, their ovules later united into a single large, handsome, blue fruit. The two species take kindly to cultivation and are not particular about soil or exposure. They are interesting additions to any collection of shrubs.

Ostryopsis Davidiana is blooming in the Arboretum for the first time. It is the only representative of a genus of the *Cupuliferae*, closely allied to the Hazels; indeed some authors have included it in that genus, from which it is distinguished by its female inflorescence. This is a small ament, terminal upon the branches of the year, composed of ovate, leafy, two-flowered bracts, each flower enclosed in a leafy, coriaceous, lobed involucre, split on the ventral side, and in a tubular membranaceous exterior involucre toothed at the summit and analogous to the leafy covering of the hazel nut. The fruit, borne in clusters of six or eight at the extremities of the branches, is dry and indehiscent, and is enveloped in the persistent, striated, pubescent involucre. The nut is conical, obtuse at the summit, about half an inch long and crowned with the persistent stigmas. The male flowers, which are similar to those of the Hazel, are produced from the wood of the previous year. *O. Davidiana* is a graceful and perfectly hardy shrub, two or three feet high, with alternate, ovate-cordate, sub-acuminate leaves, pubescent on the under side. It is a native of Mongolia, where it was discovered by the Abbé David, and of the mountains in the neighborhood of Peking. It grows freely in any garden soil and requires no special cultivation or care. A beautiful figure (*t. 3*) was included by M. Lavallée in his "*Arboretum Segrezianum*."

Corylopsis pauciflora, now in bloom, is a native of Japan and a member of the Witch-hazel family. It is a dwarf deciduous shrub two or three feet high, with short pendulous racemes of yellow flowers, which appear before the leaves in the axils of large sheathing bracts, and which in structure resemble those of the Witch-hazel. This is a very compact, handsome plant of real ornamental value, which should be seen more often in gardens.

Two hardy Apricots are in bloom—a wild form of *Prunus Armeniaca*, the original of the cultivated Apricot, found by Dr. Bretschneider on the mountains near Peking, and common in northern China and Mongolia—a handsome erect shrub three or four feet high, of which there are two specimens in the Arboretum, one with pale pink, the other with nearly pure white flowers, which precede the rounded, sub-cordate, abruptly acuminate, serrate leaves, and small yellow or red, thin-fleshed, edible fruit. The second is the Siberian Apricot, which botanists now consider a geographical variety of the last. It is a taller plant, sometimes 20 feet in height, with a much lighter colored bark, and stouter branches, which are covered with pure white or pale pink flowers, preceding the ovate-acuminate leaves borne on glandular petals, and small,

scarcely edible fruit. It is a common Siberian tree, extending through northern China to Manchuria. It is very hardy here and exceedingly ornamental when in bloom. Another *Prunus* from the mountains near Pekin is now in flower in the Arboretum for the first time. Dr. Bretschneider considered this the wild single-flowered form of the well known flowering Almond (*Prunus [Amygdalopsis] triloba*), so common in gardens and one of the most beautiful of all early spring flowering shrubs. The Pekin plant produces in great profusion large pink solitary single flowers on its naked branches; and apart from its great botanical interest is a handsome and very hardy shrub, well worth cultivation. Its habit, its bark and foliage appear identical with the double-flowered plant.

Prunus Simonii, which Maximowicz, in his monograph of the species of the genus *Prunus* of Eastern Asia, considers the wild type of the Nectarine (*Prunus Persica nectarina*) is in flower. It is a dwarf tree, with erect branches covered, as well as the stem, with light gray warty bark. The leaves are oval, elliptical, denticulate and borne on short petioles; they are preceded by small white flowers, with oval, unguiculate petals and pubescent ovaries. The fruit has the grooved stone of a Peach and the smooth skin of a Plum. It is a handsome brick red, depressed-globular, and with a depression in the upper and lower sides. The flesh, which adheres to the stone, is yellow, rather juicy, although austere. It is not large, hardly exceeding an inch or an inch and a half in diameter, but doubtless might be greatly improved by cultivation. *Prunus Simonii* is a native of China, where, as well as in Japan, it is often found in gardens. Here it forms a small and perfectly hardy tree, with a strict pyramidal habit. Its resemblance to the cultivated Nectarine is interesting, and might be taken advantage of by pomologists to establish a new race of hardy Nectarines capable of supporting the extremes of our northern climate.

May 12th.

J.

The Forest.

A New Jersey Pine Forest.

THE illustration upon page 164 represents a pure forest of Pitch Pine (*Pinus rigida*) in Ocean County, New Jersey. It is situated about twelve miles from the sea coast, and forms a part of the extensive and interesting domain which surrounds the Laurel House at Lakewood, to the proprietors of which establishment it belongs.

This forest is interesting from several points of view. It is extremely picturesque and beautiful. It occupies ground which only fifty years ago was employed for farming purposes; and it is one of few forests composed of a single species of tree which can be seen in the Northern States, where a number of different trees are usually associated together in forest growth. The Pines in this Lakewood forest have an average height of fifty feet; and their trunks an average diameter of ten inches. They stand so close together that grasses and undershrubs cannot survive in their dense unbroken shade. The forest floor is deeply carpeted with moss, however, and altogether this forest reminds one more of one of the planted Pine forests of northern Europe than anything we remember to have seen before in the United States. The rapid and vigorous growth of this young forest upon poor and comparatively worthless lands shows, moreover—and this is its chief interest—the way such lands along the Atlantic seaboard, north of Virginia, can be used to the best advantage. And finally it illustrates the possibility of protecting, by means of a little trouble and foresight, such forests from burning up in the fires which annually rage, unchecked, over great tracts in the New Jersey coast region.

The Pitch Pine springs up spontaneously on the sandy soil which adjoins the coast from Massachusetts Bay to the capes of Virginia. Land which has once been tilled and then abandoned again to nature, in all this region is soon covered with a dense and almost impenetrable mass of young Pitch Pines, which if fire is kept away from them soon grow into a valuable forest. If the young Pines do not appear spontaneously the seed can be sown, at a very trifling expense, and with entire assurance of an abundant crop. The seed of no other Pine, of no other tree, indeed,

sown in the open ground, germinates with such certainty, as the farmers in some of the towns on Cape Cod have shown; and there is no other tree which can be grown so cheaply on these barren, sandy soils, or give better results in so short a time. And could the people of New Jersey be induced to follow the example of the owners of the Lakewood forests, and protect and encourage the young Pines which are struggling to obtain possession of much of the lower part of the State, its wealth and prosperity might be very considerably augmented.

The Pitch Pine is not one of the most valuable Pine trees of the United States. Its wood is coarse grained, full of resin, and not very strong. It is in every way inferior to the wood of the southern Long-leaved Pine, which it resembles in structure and general appearance, but which it will never replace as long as the southern Pine forests continue to yield as freely as they do at present. But the time will come, perhaps, when New Jersey pitch pine will play an important rôle in supplying the people of the United States with timber. The southern pine cannot last forever, under the existing management of these forests, and the species which is everywhere replacing it, the Old Field or Loblolly Pine (*P. Tada*), is inferior to the northern Pitch Pine in the quality of the timber it produces. Before southern pine was brought to this market the pitch pine of New Jersey was the only available material in many parts of the State for timbers and flooring; and there are still houses in some counties where floors and floor-timbers are known to have been in constant use for more than a century. But it is for firewood and for charcoal that the pitch pine is most valuable; and the nearness and accessibility of these New Jersey Pine forests to great centres of population give them special importance as sources of fuel supply, which no other forests of this character in the country possess. Much land within three or four hours by rail of this city and of Philadelphia, now utterly unproductive and rapidly deteriorating through the fires which sweep over it every year, can be made highly productive and profitable by means of the Pitch Pine. People who own land of this character will see much to interest and instruct them in these Lakewood forests, and in those in the town of Orleans, on Cape Cod, in Massachusetts.

C. S. S.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—May I be allowed to say a word in defense of the Norway Spruce, which lately seems to have had the axe laid at its roots rather unmercifully?

It is quite easy to understand how it originally found foothold among us, because while young its habits and color appeared to be good, its native climate corresponded fairly well with our own, it could be imported at trifling cost, and was, for quite a long time, a well recognized favorite in landscape effect. To-day we see all over the older settled portions of the country a great many forlorn, weary looking trees that it would be a kindness to remove altogether. They are denounced as failures, and certainly we share the general opinion in asking for their extirpation. But we must emphatically resist the seemingly general verdict that the Norway Spruce is worthless for our planting purposes. On the contrary, there is not to-day one single evergreen that, under proper conditions, offers more inducements to the landscape gardener. Let me state these conditions briefly and you may judge for yourselves.

It is desired to establish a low evergreen hedge, of uniform color, dense habit, inexpensive and reasonably hardy. These are the essentials in a good hedge of this description, and for these good qualities, the Norway Spruce still compels your respectful attention. The Hemlock (*Tsuga Canadensis*) is handsomer, but it will not stand the hardships of our foreign friend. The Rocky Mountain Spruce (*Picea pungens*) is stiffer and probably more hardy, but not uniform in color. Even our White Spruce (*Picea alba*) is off color as compared with the Norway, though as a grown tree it is far superior.

Please bear in mind that our hedge is to be well planted in good soil, well trimmed each year, and never suffered in any way to deteriorate, so far as skillful maintenance can pre-

vent it. Under these conditions the Norway Spruce is ready to disarm criticism and challenge admiration.

Again, the Austrian and Scotch Pines are both excellent trees for a first establishment of wind-break in exposed situations, and any wholesale condemnation of them shows only a lack of knowledge as to their best possibilities. On the other hand, while the Douglas Fir appears in every way a most promising tree for our Eastern climate, it is proving a little too much on the part of "Strobus" when he calls attention to its remarkably handsome record in England. If this record proves anything it certainly goes to show that it is better adapted to the English climate than to ours, as we very rarely find the same tree doing equally well in England and New England.

In closing, let me state frankly that American trees are, for general use, far more valuable than foreign ones, but we should be very sorry to give up our acquaintance with many old favorites from across the water, especially as we are just beginning to find out exactly what their real value is likely to be to us here in the future.

Boston, Mass.

J. H. Bowditch.

[The Norway Spruce is unquestionably one of the very best Conifers which can be used in the Northern States to make a hedge. It grows rapidly, is very uniform in color, as our correspondent points out, and bears the shears well. The White Pine, too, makes an excellent and very hardy hedge; and with a little care in selection, plants of the White and of the Colorado Spruces could be found of uniform color. The last has probably never been tried as a hedge-plant. Its hardness, rigidity, pleasing color and pungent foliage seem to adapt it admirably for this purpose. It would not be surprising if the Douglas Fir should succeed equally well in England and in New England, although it is perfectly true that the same tree rarely does equally well in western Europe and eastern North America. Few trees flourish under such widely different climatic conditions as the Douglas Fir. It grows on the North-west Coast in a mild climate, where the annual rain-fall is between sixty and seventy inches, and on the dry eastern slopes of the Rocky Mountains of Colorado and New Mexico, where the cold is intense and the rain-fall is often less than twenty inches. The plants which grace the plantations of Great Britain are of Oregon and Californian origin. Those which now promise so well in our North Atlantic States are all from seed collected in Colorado.—Ed.]

Recent Publications.

Report upon the Forests of Honduras. By E. D. M. Hooper. London, 1887.

This is the last of a series of reports upon the forests of the British possessions in Tropical America, including those of Jamaica, of St. Vincent, of Grenada and Carriacou and of St. Lucia, made by Mr. Hooper, a trained officer of the Indian Forest Department detailed for this duty.

British Honduras owes its existence as a Colony to the value of its forests, and for two centuries the cutting and exportation first of logwood and then of mahogany has practically been the only occupation and the sole source of revenue of its people. The best logwood was used up years ago, and it no longer pays to export it; and the mahogany trade does not appear to be in a very flourishing condition. The large trees near the streams have been cut, and none remain except in remote and often almost inaccessible parts of the Colony. The government is now, however, fully roused to the importance of protecting the mahogany in the forests and has adopted stringent regulations controlling the cutting of these trees upon the public domain. Mr. Hooper recommends the organization of a forest establishment and the appointment of forest inspectors to regulate the cutting of Mahogany trees, the location of forest roads and the planting and care of valuable timber and rubber trees; and in view of the importance of the timber industry of the Colony his recommendations certainly should be adopted.

The forests of British Honduras, so far as their composition is concerned, can be grouped in two distinct divisions—the Pine forests of the coast and of the "Broken Ridges" of the

interior and the low-land hard-wood forests which cover the rest of the Colony. The tree which occupies almost exclusively the dry gravelly soil of the broken ridges is the *Pinus Cubensis*, a species which finds the northern limits of its distribution in South Carolina, and is common on our Gulf Coast east of the Mississippi. It is a very valuable timber tree; and it is not impossible that these Pine forests of Central America may become a considerable factor in the lumber supply of the world. The most important of them occupies "the Pine Ridge South of the Cayo stretching away south to an unknown distance and westward into Guatemala. Its area cannot even be guessed. And generally Pine forests may be said to occupy such land in the Colony as is raised above the general level of the country." Of the character of these Pine forests Mr. Hooper says: "Except in the narrow valleys, the forest of *Pinus Cubensis* may be considered a fine one. I counted 101 trees in a fairly average acre. The growth is tall and straight, but it is slow, a cut tree showing 60 rings in a radius of 6.6 inches at four feet from the ground, and at this point the bark was 1½ inches thick. A tree of 15 inches in diameter measured 75 feet in length to the branching and had a total length of 114 feet, while a tree 10 inches in diameter was 67 feet in length." The timber was found to be of excellent quality and hardly inferior to that of our Southern Pine, which it much resembles. The second division of the Honduras forests, that covering the general level of the country where the soil is deep and rich, is far more valuable and extensive. It consists of hard-wood trees. "This forest," says Mr. Hooper, "is difficult to describe." It is a majestic admixture of graceful trees of towering height with an undergrowth of all sizes—from small seedlings to large poles. The soil, which is of the richest loam, is carpeted with a thick growth of small palms, club-mosses and ferns, emerging from which is a small tree growth forming so thick an intermediate stage between the ground and the summits of the majestic trees that the latter can be recognized only from their bark displayed on a level with the beholder. Over the smaller trunks are festooned long garlands of Vanilla and other root Orchids, while parasites, with the most fragrant masses of flower, are clustered on every branch, interspersed with clumps of Bromelias and similar growths. The intermediate growth is composed in great measure of the Cohune palm (*Attalea*) and from its presence in quantity the type of forest takes its name. Its distribution is affected by the near presence of running water, for it often monopolizes the banks of rivers and is not so generally represented further away. It is found vegetating in clumps, small and large together—trees having as yet no stalk healthily growing associated with parent stems over which are masses of thick woody creepers, and were it not for the compactness of the growth giving material support, numbers of trees would be brought down by the weight of these climbers. The tree itself grows solidly even when in the open, it seems but little affected by wind and in this respect resembles Pine trees in being elastic. The tall tree growth which towers over the general forest includes Mahogany, hitherto the most important tree in Honduras, its export having been at all times the staple trade of the Colony. It is found in some less accessible parts in a state of natural distribution—that is to say, trees of all sizes and age in proximity to one another. Unfortunately this is seldom seen in the parts of the country which are within reach of the cutter. In other places where it has been, it is found no longer, the species being cut out and even seedlings are not present. Finally, in parts we see the young Mahogany, which is as yet in comparative infancy and has not pushed its head through the canopy of the older untouched trees; but should the demand for the undersized wood continue it is certain that, with the multiplicity of small mahogany merchants with little or no capital, this will also disappear and the Cohune forest within easy reach of streams will be without Mahogany. Apart from its appearance on Cohune ridge, I would add that the distribution of this species is general except on Pine ridge and the poorer broken ridges and Logwood swamps. Elsewhere it is common, whether in hills or in valleys, on rocky soils or deep loams." Mahogany is not the only valuable timber which these forests contain. Mr. Hooper in an appendix to his instructive report enumerates no less than 50 others of commercial importance, which when better known in Europe will greatly increase the revenue of the Colony. The fact that only 15 of these have been determined botanically during all the years that Honduras has been occupied by Europeans, shows the difficulty which attends the study of trees in the high, dense forests of Tropical America, and the field for investigation these forests offer to the ambitious and energetic botanical explorer.

Periodical Literature.

Writing of the "Spring Flowers of California" in the April number of the *Overland Monthly*, Mr. Charles Howard Shinn excites the envy of Eastern readers. February in California, he says, corresponds to the "changeful, sweet and coquetish" April of the English poets, and April in California means "the first radiance of the full Rose garden, the farewell of the scarlet Quince and the purple Lilacs." And among the wild flowers it means a profusion of blossoms, many of them identical in name with our own early summer species, but different in form and often much more brilliant, which contrasts very strongly with the humble efforts that the Eastern States make in this month to adorn themselves. No one, writes Mr. Shinn, who sees California for the first time now, can imagine how much more beautiful it was in the days of the pioneers, before "herds of cattle and bands of sheep trampled the soil and destroyed Nature's great wild garden," now "seas of flowers" have been exterminated, "leagues of wild Oats, Mustard fields in which, when in bloom, men on horseback could lose themselves, wild Lilies bedded in mass extending for rods. . . . Wild flowers that forty years ago spread in broad carpets from mountain to mountain across great valleys have retreated to bits of rock and ravine, to sunny hill-pastures and warm Oak-openings not yet needed for vineyard and orchard." Yet, we repeat, his account of what still remains suggests delights which may well make us envious.

Recent Plant Portraits.

ODONTOGLOSSUM URO-SKINNERI, *Le Moniteur d'Horticulture*, February.

EUCALYPTUS UINIGERA, *Gardener's Chronicle*, April 14th; from a tree grown in Scotland and now more than sixty feet in height. This is believed to be the hardiest of the genus. It is a native of the Tasmanian Mountains; and "may become," says Baron Von Mueller, "of sanitary importance to colder countries in malarial regions, the foliage being much imbued with antiseptic oil." This species attains a height of 150 feet, with a trunk circumference of eighteen.

ANTHURIUM CHAMBERLAINI, *Gardener's Chronicle*, April 14th; "one of the noblest species in a genus already rich in superb species, and handsome alike in foliage and in flower." It is supposed to be a native of Venezuela; and it has immense cordate leaves, three feet long and two feet wide, and "thick boat-shaped spathes about eight to nine inches long and four wide . . . of a pale, dull puce color externally, shining and rich deep crimson colored internally, bordered by a very narrow line of ivory-white, edged in turn by a narrow margin of yellow." The red-purple spadix is raised on an ivory-white stalk.

PEAR, BELLE PICARDE, *Revue Horticole*, April 1st.

MACARANGA PORTEANA, *Revue Horticole*, April 16th. A striking looking Euphorbiaceous tree, with bold, very large, ornamental foliage, introduced into the *Museum d'Histoire Naturelle*, from the Philippine Islands by the French botanical traveler, Marius Porte, to whom gardens are indebted also for *Phalenopsis Schilleriana*, *Phalenopsis Luddemanniana*, *Cycas Ruminiana* and many other interesting plants.

PHŒNIX CANARIENSIS, *Revue Horticole*, April 16th. A hardy and very graceful Palm, now very generally cultivated in the gardens of southern Europe. It is one of the best house plants, and may be expected to thrive in any part of the United States where the Orange is hardy.

Notes.

The interest now felt in American horticulture, and in some of our large collections of plants, especially of Orchids, in England, is shown by the fact that the supplement of a recent issue of the *Gardener's Chronicle*, of London, is devoted to a view of Mr. W. S. Kimball's collection of flowering plants of *Cypripedium insigne*, which contained, when this picture was made, not less than two thousand blooms, and must have presented a marvelous spectacle.

The entire stock of the remarkable white Chrysanthemum, Mrs. Alpheus Hardy—widely known by the striking illustration in the first number of this journal—has been purchased by W. A. Manda, of Cambridge, Mass. The price paid was \$1,500, the largest amount ever given for a Chrysanthemum, at least in this country. The flower was exhibited for the first time at the Chrysanthemum Show in Boston last December.

Mr. Thomas H. Douglas, a son of Mr. Robert Douglas, of Illinois, has been appointed by the Board of Forestry of California, Head Forester of that State. Mr. Douglas has already established extensive nurseries and trial grounds at Chico, Santa Monica and Hesperia. A map of the State showing the extent and character of the timber in the different counties is being prepared, and active operations looking to the arrest and punishment of persons setting forest fires, or illegally cutting timber, have been inaugurated.

Retail Flower Markets.

NEW YORK, May 25th.

There is a fair supply of flowers, with few really choice Roses. There is small demand for elaborate designs, the orders for Decoration Day being mostly for plants for embellishing statues, and wreaths for graves. Branches of blossoming shrubs are mixed with Roses in the large baskets made up for farewell tokens sent to steamers. Anna de Diesbach Roses are the choicest of Hybrids this week, and after these, Baroness Rothschild. Selected flowers with long stems cost from \$7.50 to \$9 a dozen. The former price is charged for the average lot of Hybrids. American Beauty sells for \$6 a dozen. Puritan Roses that are perfect are scarce and cost \$4 and \$5 a dozen. General Jacqueminots continue poor, and those grown in-doors are still declining; they cost from \$2.50 to \$4 a dozen. Moss Roses bring \$4 a dozen. La France Roses are abundant, and generally of good quality; they cost \$3 a dozen. Brides and Catherine Mermets cost \$2 a dozen. Perles, Niphetos and Souvenir d'Un Ami cost from 75 cts. to \$1 a dozen; Bon Silene from 50 cts. to 75 cts. a dozen. A few lingering Tulips of late flowering kinds are to be had for \$1 a dozen. Lilies-of-the-Valley are 75 cts. a dozen; Callas, \$2.50 a dozen; Poet's Narcissus from 50 cts. to 75 cts. a dozen, and Gardenias, \$3 a dozen. Lilacs are very plentiful and inexpensive, a large bunch being sold for 5 cts., on the streets and in the city markets. A few Field Daisies appear from the south, bring 25 cts. a dozen. The yellow Paris Daisy costs 50 cts. a dozen; fine Mignonette brings 50 cts. a dozen; it is small but well tinted. A few Pæonies have appeared, which sell at fancy prices. Carnations are scarce, but handsome; they cost 25 and 50 cts. a dozen, the latter price being for Buttercup and Grace Wilder.

PHILADELPHIA, May 25th.

Cooler weather has again made flowers scarce, but it has also toned up the quality and the demand has been greater. These conditions have caused a trade which is brisk for the month of May. Many out-door flowers have passed their prime, and this has caused Roses to be more in demand, although no material change in prices has taken place since last quotations. Amongst wild flowers Buttercups and the native Violets are extensively used, especially for personal adornment, and Columbines are occasionally used for the same purpose. Tree Pæonies are being cut in limited quantities, and sell at \$3 per dozen. They are decidedly coarse, but are useful in heavy decorations, and in the florists' windows they make an attractive display. Lily-of-the-Valley is still good, being cut out-of-doors; the foliage is thick and leathery in texture, and a dark rich green in color; very little is sold for less than \$1 a dozen. The beautiful Moss Rose with pink flowers is offered in limited numbers at from 25 cts. to 50 cts. a spray. The wonder is why more of these exquisite flowers are not to be had, for they are eagerly bought at the prices named. The difference in price is due to the different number of buds on the sprays. Single Dahlias still hold firm at \$3 a dozen, and Gladiolus is steady at the same price. Smilax, Asparagus and Adiantum are plentiful and fine in quality.

BOSTON, May 25th.

Bright weather has brought flowers in abundance and of better quality. The improvement is especially noticeable in Roses. Fine Jacqueminots and Madame Gabriel Luizets are in market, and are worth \$4 a dozen. Mermet, La France, Bride and Perle all sell for about \$2 a dozen. There is a fair supply of Papa Gontier coming in, and selling readily at \$1.50 per dozen. Carnations are unchanged since last week. Violets have disappeared completely. Pansies are growing smaller. The only Lilies-of-the-Valley obtainable are grown out-of-doors. Narcissus will last but a few days longer, and Tulips are in their prime. White Stocks and *Spiraea Japonica* are worth \$1 a dozen spikes. They are abundant, but probably not equal to the demand for Decoration Day. As this occasion approaches it becomes more and more evident that, owing to the backward season and the scarcity of out-door flowers, there will be a short supply in general, and prices will advance considerably. Among the brightest blossoms in the florists' windows are the Scarlet Nasturtiums, now quite abundant. They are sold in small bunches at 50 cts. a bunch. Cape Jessamines from the South have been sent here in small quantities this spring, but they do not seem to meet with the same favor with which they are regarded in other parts of the country. Hydrangea plants are very handsome just now, and there is a large trade in them. There will be an unusually large number of fashionable weddings next month. Some of the leading florists have already many orders in advance, and the prospects of the cut flower trade for the immediate future are good.

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The Rainfall on the Plains.

SEVERAL weeks ago, in discussing the question of water supply on the Great Plains, it was stated in these columns that no data could be found to justify the belief that any increase of rainfall had followed the movement of emigration towards the Rocky Mountains. On the contrary, the calculations made by Mr. Gannett seemed to establish the fact that there had been no such increase. This is opposed to the statement often made that the simple planting of scattered groves of trees in Kansas and Nebraska has materially changed the climate in this regard, so that with more abundant rain, crops can now be raised beyond what was the western limit of profitable agriculture several years ago. It was added that if there has been any modification in the agricultural condition of the Plains which enables farmers to reap paying harvests where it was once thought that crops could be produced only by the aid of irrigation, this change could be accounted for on other grounds than that of an increased supply of water in the form of rain. It should be remembered that crops are often raised with profit on lands where the rainfall during the entire year, even if it could all be utilized, is not sufficient to insure a maximum yield. And in temperate climates it rarely happens that the rain which falls during the growing period of a crop is sufficient for its support. The water stored in the ground during the remainder of the year must be drawn upon to supply the enormous amounts given off by evaporation from the surface and by transpiration from the leaves of the plants. In estimating the value of any land for agricultural purposes, it is therefore necessary to take into account its capacity for absorbing and holding moisture as well as the amount of rain-water which annually falls upon it. And it is not improbable that the breaking up of the surface of the Plains has enabled the soil to receive and retain a considerable amount of the rainfall which would have flowed off into the streams from the hard, smooth face of the unplowed land.

These problems cannot be accurately solved until trustworthy data have been collected by years of patient investigation. Nevertheless the prevalent belief of intelligent men in these western regions is of great value as an indication of the truth. If it were their united opinion that the rainfall had increased, it would justify the supposition that there was some climatic change in this direction, although the extent and amount of such change would remain a most uncertain quantity.

This view of the case gives special interest to a chapter in the last quarterly report of the Kansas State Board of Agriculture which has just been received. Among the papers read at the annual meeting of the Board was one by the Secretary, in which the "improved condition of the water-supply in the State" was mentioned as one of the promising indications of a prosperous future for its agriculture. These improved conditions, the Secretary said, did not come from an increased rainfall, but probably from the loosening by tillage of the almost impervious crust of the prairie, and the consequent detention of the water which had formerly flowed off swiftly into the streams. A general discussion followed the reading of this paper, in which men from all portions of the State took part, and so far as the report shows, no one claimed that there had been the slightest increase in the rainfall. One member of the Board expressed the belief that "the State had been seriously injured by spreading abroad the impression that a wonderful climatic change was going on whereby the dry prairies were to be made to blossom as the Rose," and many others declared that long and careful observation had convinced them that no more rain fell now than when the prairies were trampled by immense herds of buffaloes. The opinion, however, was very general that the condition of the soil, as regards moisture, had been improved by cultivation, that there was more dew, that springs had appeared in places where none existed in earlier days, and that after heavy rains the streams did not rise as rapidly, nor to as great a height as formerly.

It was suggested in the discussion that Kansas farmers had learned to overcome, in a measure, adverse climatic conditions, by deeper and more thorough tillage and better cultivation. This may help to account for paying crops beyond the ninety-eighth meridian, and may modify the opinion that successful agriculture there is due alone to the increased storage of water in the soil. However that may be, the alert farmers of the frontier are wise in basing their hopes of success on something more substantial than the opinion that trees will call down more abundant rains upon their fields. That forests exert an important influence in conserving the moisture in the soil is an established fact, and the planting of trees where they will grow in the west, may, in time, render important service to agriculture. But the coming of this time will not be hastened by claiming advantages from forest planting which cannot be justified by any recorded experience or by scientific argument.

Formal Flower Beds.

NO question affecting the art of gardening is more frequently discussed than the question whether the formal flower bed is a thing to praise or to condemn, a thing which gratifies a cultivated taste or one which merely panders to the taste that delights in vivid chromos and in pinchbeck personal adornments.

About a hundred and thirty years ago the formal, "architectural style" of gardening—which had ruled in Europe for many centuries, and had found its most conspicuous expression at Versailles—was superseded by the "natural style," the style for which the distinctive name of landscape gardening was soon invented. Then for a long time the use of formal flower beds was almost as entirely abandoned as the use of clipped trees and straight-lined terraces. Even in small gardens given up entirely to the

cultivation of flowers (like the gardens of our grandmothers' days), although the paths might be straight and formally edged with Box, the plants themselves were not formally arranged—were not massed according to colors, nor clipped into uniform shapes, nor relieved against broad stretches of turf. It is only within comparatively recent years that there has been a return to the genuine pattern-bed, and its complement, the ribbon-border. An explanation of the revival of a taste for such beds and borders has often been found in that fancy for bright-flowered Geraniums which was so strong some twenty years ago that in England, at least, it amounted to a veritable horticultural craze, and in the general introduction a little later of the Coleus and other colored-leaved plants. But it is a mistake to attribute to a love for such plants the revival of a love for pattern-beds and borders. The converse statement would be nearer the truth; it might better be said that they became popular because public taste demanded just such plants for a particular purpose.

This purpose, if its results be carefully examined, proves to have been identical with the desire to increase the beauty of home-grounds in such a way that the smallest expenditure of thought and pains might produce the quickest and most conspicuous results. An immediate effect and a showy effect—these were the things desired in our gardens; and it was perceived that the most seductive recipe for securing them was to mass such plants as Coleus and Geraniums in large bodies so that their vividness of leaf and flower should be brought into strong relief by an expanse of closely cut turf. This desire was not in itself a very laudable one; and it would be easy to show that the recipe upon which it seized was not so satisfactory, even apart from æsthetic questions, as it appeared to superficial eyes. It would be easy to show that the practice of "bedding out" is, in the long run, the costliest which can be adopted for the adornment of a garden, whether large or small. But we are concerned just now simply with the artistic value of the formal pattern-bed. Is it a beautiful thing, or is it an ugly thing?

As thus put—in a general, abstract way—the question cannot be categorically answered. What must be said is that, like almost everything else in the world, a formal flower bed is beautiful or ugly according to whether it is in the right place or in the wrong place. It is never an isolated object. It is always an object which the eye embraces in a single glance with many others. And according as it agrees or disagrees with its surroundings, according as it helps or hurts the general impression which all together make, it is beautiful or ugly.

Let us see now what its characteristics are, in order that we may understand where it may be used to good effect, and where it can be used only to bad effect. They are easily defined characteristics: Conspicuous formality—that is, symmetry and rigidity—of outline and surface, and conspicuous brilliancy of color. And they are characteristics which, when thus set forth in words, themselves explain their right employment. When rigid, symmetrical lines of other sorts enter into a scene, and when a large spot of vivid color does not strike too loud a note in the general effect, then the pattern-bed is in place. Under other conditions it is out of place.

Unfortunately this is to say that, as we most often see it used, it is decidedly out of place—decidedly injurious to the scene which it is supposed to ornament, and, therefore, ugly in itself. We most often see it used to ornament the lawn in a place which has been laid out according to a natural, unsymmetrical scheme. No position could be worse for a formally outlined flower bed than one in which all the surrounding lines—alike of gravel walk, of free-growing shrub and of untrimmed tree—are varied, unsymmetrical and natural in effect. And no position could be worse for a mass of brilliant colors than an isolated position in the centre of a stretch of shaven turf. It ruins that air of unity, repose and breadth which is the one end and aim when a lawn is

created, while the wide carpet of green throws its own colors into such undue relief that it looks like a crude and gaudy picture hung on a strongly tinted wall.

In short, there must be something in the vicinity of a formal flower bed to suggest what it suggests itself, if the effect is to be a pleasing one. In the immediate neighborhood of a work of architecture a pattern-bed may be the most beautiful because the most appropriate object which could be introduced; or, if intersecting walks or roads leave a formally outlined space of small extent between them, formal planting may there be the best. In small urban parks, again, if discreetly introduced, it is harmonious, both as agreeing with the symmetry of street architecture and as filling a space palpably too restricted to be properly utilized by a more natural arrangement of plants. It is impossible in a single article to discuss the subject thoroughly. But enough has been said for the moment if we have shown the true point of view from which it should be approached.

The rapid introduction into general cultivation in this country of the purple-leaved Plum, known in gardens as *Prunus Pissardi*, to which attention is called in the notes from the Arnold Arboretum printed on another page of this issue, well illustrates the existing fancy in this country for garden novelties, and especially for plants with abnormally colored foliage or habit of growth. It is less than ten years since this plant was sent to Europe from Persia, and yet the owners of a large proportion of the pretentious villas in the United States now point to it with pride as one of the chief treasures of their gardens. Glowing descriptions in nursery catalogues, and gorgeous chromos in the hands of tree agents, for which style of illustration, the deep purple leaves of this plant are particularly adapted, have quickly spread it far and near. And this tree is neither very handsome nor very desirable, and it is certainly, as an ornamental plant, inferior in every way to the Myrobalan Plum, of which it is probably only a purple-leaved form. But no one ever plants the green tree, which is now practically unknown in this country, and which probably could not be found in any American nursery, while thousands of the purple-leaved variety are planted every year.

Terrace and Veranda—Back and Front.

THE following queries suggested by the "Plan for a Small Suburban Homestead," in the issue of GARDEN AND FOREST for May 2d, have been referred to me.

"On the south side, where, in a typical American house, there would be a shady veranda, instead of it there is what is called a terrace—an uncovered platform—upon which the sun must fall and be reflected with burning heat and blinding light into the adjoining rooms. The house has no front door. To enter it from the street, visitors must go round by the back yard, close by the stable. What can be said for such arrangements except that they are striking from their originality or their foreign character? If a speaker chose to turn his back upon his audience he would offend a sense of propriety. Is there no question of propriety about the front and back of a house?"

I reply with pleasure to these inquiries.

A well-shaded apartment having been provided, outside the walls, at the south-west corner of the house, much better adapted for the seating of a family circle than an ordinary veranda, the platform called a terrace will serve desirable purposes that a veranda in the same situation would not. The family rooms giving upon it can be opened to sunshine, as it is best that all rooms should be occasionally, summer and winter. The sun can be excluded from them when it is better that it should be (leaving the air free course through the windows), by adjustable awnings. Interesting forms of decorative sub-tropical vegetation can be fittingly set upon such a terrace in immediate connection with the principal family rooms, as they could not be in the

shade of a veranda. There are several months in the year when the terrace could be occupied for one or two hours of most days as a work-room for ladies or as an airing place for an infant or a convalescent, when it would be imprudent to sit in the shade out-of-doors, or to walk on damp turf.

As to a common sense of propriety and respectability in matters of the front and back of houses, let us consider how what may pass for such a sense has probably originated.

A feudal chief wishing to lodge a body of his vassals at a particular point, before unsettled, of his domain, would provide rows of huts set closely together on each side of a common passage or street. They would have the characteristics of such huts as are to be seen now by the score, for example, at Paso del Norte on our southern frontier; a single room for a family, a door on the street side, a door on the other side, no windows, a little corral into which goats, swine and fowls are driven through the hut at night-fall.

As civilization advanced the manorial lords would find it to their profit to extend these villages, build larger dwellings, and, after a long interval, give them a little window on each side of the street door. Later, the roof would be pitched steeper and a sleeping-loft added. Then, on the street side, the walls would be built higher so that there could be upper rooms, also with windows, the roof still carried down to the first story on the opposite side.

At this stage of the evolution certain landlords might come to regard certain of their villages as a part of their lordly array; to conduct guests through their streets and to take pride in their cottages as they would be seen from the streets. It follows that new cottages would be built a little set off from the street and would be given a street doorway; their street walls would be whitewashed and tenants would be encouraged to decorate the street yards with flowering plants and to line the ways from the street to the street doors with rows of box or shells or white stones. The other side of the house would still preserve the original hovel character; would have no windows, and the door would open upon a dunghill and rough shelters for the increasing personal wealth of the tenant in goats, pigs, donkeys, geese and fowls.

It can hardly be necessary to pursue the process of development nearer to "the typical American house."

Why is it that we so often see the family rooms of a house in the country on the least valuable part of the site of a homestead; the kitchen, wash room, drying yard and out-houses on the best part of it? Why is it that if one asks at a Seaside Hotel, where he can see the ocean, he is told to go out back of the stable? The answer is that it is because of a lingering superstition—a spurious semi-religious sentiment—which had its origin when one side of most houses—the side facing a public road—was the human side, the other the side of pigs and goats and geese, filth, darkness and concealment.

The front, the back, are terms no more applicable to a well designed house in America than anywhere else. Our Capitol and our White House have two fronts. Our beloved house at Mt. Vernon has two fronts. The old Hosack house at Hyde Park on the Hudson, the finest country-seat in its natural elements in America, has four fronts, as have most palaces and many other monumental buildings, as those of our Interior and Post Office Departments. (But this is a plan hardly ever to be recommended except where there is to be a spacious interior court, as in many French and Spanish country houses.)

Generally with us a country house, and often a suburban house, will best have three fronts. Except as regard for winter shelter or summer breeze may overrule, one of these will be on the side looking from which there is the most pleasing natural scenery, and here will be the more important family rooms (as at Mt. Vernon and at the White House). If the outlook from them has a fine distant background (as at Mt. Vernon and the White House), then the

nearer premises should be treated partly with a purpose to provide a place of common, quiet, domestic occupation, to be used in connection with the parlor or library, and partly with the aim of fitting the landscape with a foreground nicely conforming to, and helping the effect of, the middle distance and the background. It is desirable for neither of these purposes that there should be a sweep of gravel on that side of the house upon which horses may be driven or be kept standing, nor that there should be a public entrance to the house there. Usually a lawn, framed and sparingly furnished with masses of shrubbery that will not grow so high as to hide the distant view, will be best. But if the natural surface of the ground is rapidly declining from the house, especially if it is in the form of a broken and one-sided declivity, having a dislocating effect in connection with the distant view, then a level platform before the house, its further edge having a parapet, balustrade or hedge, will be desirable, both in order to give an effect of security and quiet to the immediate border of the house, and to make a strong foreground line by which the distance will be softened and refined.

Another side of the house will be its garden front, chosen because (of the three remaining sides) it offers the best conditions for a garden, properly so called. Another will be the entrance front, the treatment of which will be large in scale and less fine than either of the others. But here, if possible, there should be umbrageous trees. There will remain that part of the house containing the kitchen and laundry, from which will extend yards and sheds and spaces where wagons can stand and turn when bringing supplies or taking off wastes. Beyond them, perhaps, a carriage-house, stable and smaller out-houses. This should be the side on which the outlook is of the least value, and on which the natural circumstances favor convenient but not conspicuous lines of approach.

When such a complete arrangement, as has been thus suggested, is impracticable, the same general principles may be adopted as far as circumstances admit. It rarely occurs in any interesting place that the principal entrance can be best made on the more attractive side of a house. It often occurs, as in the finest places at Newport and Long Branch, that the best location for the stables, stable yard and laundry yard is on the street side of the house, and that the approach to its principal entrance passes near these, bringing them, exteriorly, under close view.

Brookline, May 18th, 1888.

F. L. Olmsted

The Court-yard of Charlecote Hall.

AS has been said on a previous page, the beauty of a formal flower bed depends upon the question whether it is in the right place or in the wrong place. It may be more beautiful, because more appropriate, than any other horticultural decoration; and it may be more ugly because more conspicuously inappropriate than any other. Our own home-grounds, both large and small, offer numberless instances of its improper use. Examples of its proper use are not so easy to find in America; and even in Europe we more often deplore than welcome its presence. When the natural or landscape style of gardening came into favor, the reaction in taste carried artists and owners alike into an excess of hatred for all formal gardening arrangements. Many old gardens of the architectural pattern were ruthlessly destroyed, although they were appropriate and beautiful because closely connected with works of architectural art. And the formal beds of modern times are, as a rule, not much better employed in Europe than in America. But here and there in all parts of Europe, and even in England, where the love for natural arrangements long ruled more strongly than elsewhere, old gardens of architectural design, or portions of such gardens, may still be found. The illustration given on page 173 is a good example of gardening of this character, and gains a double interest from its connection with the name of the greatest of English poets.

Charlecote Hall stands some three miles from Stratford-on-Avon, and was in Shakespeare's time, as it still is to-day, the seat of the Lucy family; and it was in Charlecote Park that, as the familiar legend tells us, the young poet played the poacher's part. The hall, as it stands to-day, scarcely changed as regards its exterior, was built in the first year of Queen Elizabeth's reign—in 1558, six years before Shakespeare's birth. As we see it to-day, therefore, he must have seen it; and not only the Hall itself, but the gate-way and court-yard which our illustration shows, for these form an integral part of the plan of the building itself. Our point of view is from a spot immediately in front of the Hall, the projecting wings of which are joined by the terrace walls on either hand. Thus house and walls and gate-way completely encircle the court-yard, and the architectural design of the little garden it encloses was dictated by good taste. Imagine this small space arranged in the natural style of gardening, and we perceive at once that the planting itself would be ineffective, and that the effect of the architecture would be grievously impaired. Beyond the walls the naturally growing trees give an accent of variety, and pleasantly suggest the beauties of that wilder nature which the word park implies. But within the walls the formal beds are properly placed, and even if vivid in color they cannot be too emphatic in effect, for they are not set in immediate relief against a carpet of bright green, but are surrounded by borders of gravel the neutral tones of which, together with those of the architectural elements, must subdue the brightest floral notes into a general harmony.

Entomological.

The Work of a Timber Borer.

AS is well known, the borers of some of our shade trees, as well as the grub or larva of the *Monohammus* of the White Pine, occur in lumber, and, on very rare occasions, live on for many years, either as larvæ or beetles, probably the latter, in lumber which has been made into tables, chests of drawers or other articles of household furniture; the beetle for a long time afterwards giving out ghostly squeaks, finally emerging from its tunnel in the well-worn and familiar bureau or table, as the case may be. The latest occurrence recorded in print is noticed by Mr. J. McNeil, who states in the *American Naturalist* for December, 1886, that two specimens of a longicorn beetle (*Eburia quadrigeminata*) must have lived in an ash door-sill for a period which "would make these insects not less than nineteen, and probably twenty or more years old." A somewhat similar case happened at Salem, Mass., as we have been informed by A. C. Goodell, Esq., who took a "sawyer" beetle (*Monohammus confusor*) from a bureau that had been in his house for fifteen years, and was new when bought.

Apropos of such cases of extraordinary longevity in boring insects whose life ordinarily spans but two, possibly three, years, and which occur in articles of furniture, the Messrs. Goddard Brothers, of Providence, R. I., have called our attention to the damage done to a case of cotton cloth at their Lonsdale Mills, and have kindly presented the three larvæ found, together with a damaged bale of cotton cloth, to the Museum of Brown University.

The box containing the goods was of pine, and perforated by at least three or four grubs, seventeen pieces being worm-eaten, one of which we have examined. The worms were thoughtful enough to gnaw through the folds, so as to thoroughly riddle almost every thickness of the cloth; the perforations in one case being about three inches long and half an inch wide on the outside, and contracting for two inches within to a size corresponding to that of the body of the grub. Not having seen the box, I quote from a letter to the Messrs. Goddard from Mr. J. Johnston, of Lonsdale, who took some pains to examine the box and

to identify the worms as larvæ of a beetle. "The hole they make is in shape a very elongated oval, and is, I think, in every case about the size of the grub itself. It is unfortunate that we did not see the case as it was seen in Philadelphia. The bottom, where most havoc was wrought on the cloth, was mended with a strip of hard pine; possibly the original board was so badly damaged that it would not have been safe to return the goods in it as it was. On examining the shooks in the box-shop, I find a large proportion of them eaten by this embryo beetle. I ought to say that not a single grub can be found in the shooks; those I send were taken from live wood."

We are informed that this is the only case of the kind which has occurred out of about 250,000 boxes sent out from the mill. How long the larvæ may have lived in the lumber is, of course, difficult to say.

The larvæ, one of which was still alive, were about three-quarters of an inch in length, and on comparing them with the half-grown larvæ of *Monohammus confusor* of nearly the same size they were found to differ as follows: the clypeus and labrum are wider, the edge of the prothoracic segment is more hairy; the body is wider behind the thoracic segments, and more rounded and wider at the end. Without doubt these larvæ differ generically from *Monohammus*, but in the present state of our knowledge, it is impossible to refer them to their proper genus and species.

We may here remark that the larvæ of *Monohammus confusor* live two years before transforming into beetles, as we have been able to prove, having been fortunate enough to detect a female in the act of laying its eggs, and the year following to cut its half-grown grubs out of the same tree.

It is probable that the cases of extraordinary longevity on record are due to the fact that through some cause the insect as a beetle has been prevented from leaving the tunnel made while a grub. Its larval state may not be prolonged, but when insects are prevented from mating and laying their eggs, they live on in single blessedness through an unusual number of seasons. There is thus, apparently, a premium awarded by Nature upon celibacy, the reward being length of years. A. S. Packard.

New or Little Known Plants.

Camassia Cusickii.*

THE only American genus representative of the large Liliaceous tribe which includes the Hyacinth, the Blue Bell or Grape Hyacinth, the Squill, and the Star of Bethlehem, is the genus *Camassia*. So near to *Scilla* is this genus that it is often included under it, and we so find it in Gray's Manual. The characters which separate the two are the leafy stem, the stouter habit, and larger flowers, and the nervation of the petals, which in *Scilla* are always a single midnerve, while in *Camassia* there are from three to nine nerves, showing most plainly after the flowers are dried.

The first known species was discovered by Captains Lewis and Clark in September, 1805, upon their expedition across the continent. After a difficult passage across the Bitter Root Mountains, by what is now known as the Lolo trail, during which they had found little grass for their animals or game for their own sustenance, they came out on the tenth day upon an open meadow and to an Indian village, where they were hospitably received. The Indians "set before them a small piece of buffalo-meat, some dried salmon, berries, and several kinds of roots. Among these last is one which is round and much like an onion in appearance and sweet to the taste. It is

* C. CUSICKII, Watson, Proc. Am. Acad. xxii. 479. Bulbs clustered, large; leaves glaucous, subundulate, numerous, the larger two feet long by one and one-half inches wide; stem leafy, two or three feet high; pedicels 2-3 linear subscurious bracts about an inch long; flowers regular, pale blue, the narrow petals crisped near the base, 3-5 nerved, persistently spreading, an inch long; capsule oblong, transversely veined.

called quamash, and is eaten either in its natural state, or boiled into a kind of soup, or made into a cake which is then called pasheco. After our long abstinence this was a sumptuous treat." Seventy-five years afterward I crossed the same trail, still as wild, rugged and inhospitable as the earlier voyagers had found it, and came out into the same little prairie. The Indian village had vanished, but heaps of recently gathered Camass roots showed that the Indians still frequented the place, while marks of a mowing machine upon the grass were equally sure evidence of the near neighborhood of some white settler. Lewis and Clark in their narrative make frequent mention afterward of "quamash flats," and upon their return took back with them the specimens upon which Pursh founded the species *Platangiun Quamash*. This name Lindley subsequently changed to *Camassia esculenta*, the *Camassia* being a Latinized form of the Indian name *quamash* or *camass*.

nerves. It is described as growing on mountain slopes, instead of in meadows, and the bulb is nauseous, pungent and inedible. The figure on page 174 has been drawn by Mr. Faxon from a specimen that has recently flowered at Cambridge. S. W.

Plant Notes.

The Ginkgo Tree.

THE Ginkgo tree, as it is generally seen in this country, especially in the Northern States, where the climate is perhaps too severe for its full development, has rigid branches, and a stiff and not particularly attractive habit of growth, which make it difficult to use this tree satisfactorily in connection with other trees of less formal outline. As it approaches maturity, however, under favorable conditions, the Ginkgo, as our illustration on page 175,



The Court-yard of Charlecote Hall.—See page 171.

In 1810 Nuttall collected what he believed to be the same species "near the confluence of Huron River and Lake Erie," and afterward near St. Louis and on the banks of the Ohio. This eastern form, which ranges southward into Texas, was separated by Dr. Torrey and is known as *C. Fraseri*. The original Camass is abundant in many low meadows from Idaho to the Pacific, and has been an important article of food to the native inhabitants. On the lower Columbia, a third species, *C. Leichlinii*, is found, which has an equally nutritious root, and still a fourth species has been recently discovered in the Blue Mountains of Oregon, by Mr. W. C. Cusick, of which a figure is here given.

This is the stoutest and most vigorous grower of all the species, with a large bulb, numerous broad glaucous and somewhat undulate leaves, and a flowering stem two or three feet high. The flowers are of a delicate very pale blue, the petals spreading regularly, crinkled at the narrow base, and with three, or rarely five, faint

representing the noble specimen in the famous gardens of the Villa Carlotta, on the shores of the Lake of Como, shows, is a really beautiful and graceful tree, which will hardly be recognized by persons who have only seen it in a comparatively young state in parks and gardens in the Northern States. Most of the specimens in the United States still require time, probably, in which to develop their real beauty, but that they can in time attain the same graceful habit of growth, if not the same dimensions, as the tree we figure, the fine specimen planted in the first years of the century by Dr. Hosack, on the banks of the Hudson, at Hyde Park, amply testifies.

The Ginkgo, apart from its beauty, is a tree of very great interest, owing to the peculiarities of its botanical characters. It is one of the family of Conifers, but unlike the members of that family with which we are most familiar in this country, its leaves are deciduous, broad and fan-shaped, and instead of a cone, the fruit is a fleshy drupe, containing a large stone resembling that of an Apricot, and

with a delicate edible kernel, although the fleshy portion of the fruit has a most disagreeable rancid flavor. The male and female flowers are produced on separate trees, so that it is necessary to plant specimens of the two sexes in order to insure a crop of fruit, which is not produced until the trees have attained a considerable size. The Ginkgo is supposed to be a native of some part of northern China, where it is frequently cultivated in the neighborhood of temples and palaces, but it is nowhere known in a wild state. It has been cultivated in Japan, where it is believed to have been introduced, from time immemorial, and where it is valued for its beauty as well as for its nuts, which are highly esteemed by the Japanese.

This tree was introduced into Europe about 130 years ago, and it must be nearly a century since it was first sent to America. The peculiar shape of the leaves has gained for it the name of the Maidenhair tree, from their supposed resemblance to the fronds of the Maidenhair Fern. It is a large tree, producing valuable timber, sometimes attaining in Japan a height of nearly 100 feet, with a trunk three or four feet in diameter. The Ginkgo, to which the name *Salisburia* is sometimes improperly given, is very hardy as far north, at least, as New England, although a milder climate seems necessary to develop its greatest beauty. Considerable attention has lately been given to the Ginkgo in Europe, as a subject for street and road-side planting, and thousands of these trees have been planted during the last few years along the highways near some of the French and Italian towns of the Riviera. Its hardiness and its habit of growth seem to fit it admirably for this purpose.

Old Lombardy Poplar at the Trianon.—In the charming park of the Trianon where Louis XIV. was wont to retire for a time—when he was tired of the splendors of Versailles—stand the remains of a fine old Lombardy Poplar which was planted by Marie Antoinette. The top of the tree was blown off by a storm in 1880, but the trunk is yet full of life, and has a circumference of seventeen feet six inches, four feet from the ground.

Sugar Maple.—A diligent search through the park at the Trianon for trees, original specimens introduced into France by Michaux, was not successful. Since Michaux's time there have been revolutions and changes of Government, and the authorities do not seem able to point to many trees which can be said, with certainty, to date back to Michaux himself. One, however, a goodly sized Sugar Maple, is probably an original tree, and it was, by no means, in thoroughly good order, as the Mistletoe had taken complete possession of it. The branches were weighted down with this parasite, although the year before large quantities had been carefully cut out.

Ginkgo biloba.—A fine pair of these trees—perhaps better known under the name of *Salisburia adiantifolia*—stand in the State nurseries at Trianon. They are a male and female, and the latter was laden with fruits at the time of my visit last autumn. The larger of the two had a trunk which measured more than two and a half metres in circumference. It seems strange that so handsome a tree has not been planted more

generally along avenues in France. A gentleman now residing on the Riviera, familiar with the *Salisburia* as a street tree in Shanghai and other Chinese towns, has, at his own expense, planted avenues of it in some of the small Italian towns near the French frontier. If these succeed, and there seems no reason to doubt it, the Ginkgo will probably become popular throughout southern France.



Fig. 32.—*Camassia Cusickii*.—See page 172.

Actinidia volubilis.—Has any one grown this shrub in the United States for the sake of its fruits? A fine specimen, trained to a stake, at the Chateau de Segrez, was, last autumn, laden with round fruits, green in color and about the size of a large hazel nut. The taste was decidedly agreeable, the flavor not unlike that of some kinds of gooseberry. Probably the best and most complete collection of hardy ligneous plants,

not only in France, but on the Continent of Europe, exists at Segrez; it represents many years of care and study, and cannot fail to impress the visitor with the value of the labors of the late M. Alphonse Lavallée. It is earnestly to be hoped that the present representative of the family will follow up the work carried on with so much enthusiasm by his father.

George Nicholson.

In most green-houses such vines as Passion-Flowers, Stephanotis, Allamanda, Quisqualis, Lapageria and the like are trained to wires running along the rafters or lengthwise across the rafters. Unfasten these now and give them a thorough cleaning before tying them up again. To remove the coating of black dirt often found on the old leaves of vines, keep the leaves wet by sprinkling them with water for some hours



Fig. 33—The Ginkgo Tree.—See page 173.

Cultural Department.

The Green-house.

GREEN-HOUSES have now been emptied of summer garden plants, and many winter-blooming plants have been turned out-of-doors for the summer to complete their growth and ripen their wood. This gives an opportunity to clean thoroughly green-houses and the plants remaining in them, and to rearrange and display them to the best advantage.

Wash the dark stains off the sash-bars and rafters and scrub the dirt and green confervæ off the plates, sills, stages and walls inside. Glass partitions and doors are apt to become dingy, and they should be well cleaned. If the houses are old, and there is any appearance of mealy bug about the plants, paint the wood-work inside with turpentine or kerosene, and stop all nail-holes and cracks with putty or rubber cement.

before washing. This softens the scurf, and it can be washed off with comparative ease.

The in-door decoration of the green-house in summer depends upon the kinds of plants grown, the purpose for which they are required, and the room and other conveniences at hand. Green-houses in summer are not in all cases genial homes for plants; they are apt to become too hot, hence gardeners provide out-door summer quarters for all the pot plants which are benefited by such treatment. But if the summer decoration of the green-house is desired there are among fine-leaved plants Palms, Anthuriums, Caladiums, Dracænas, Crotons, Marantas, Begonias, Ferns, Mosses and many others. See that all are perfectly clean and in good condition at the root; that they are neither over-potted nor under-potted; that the drainage is perfect, and that they are so arranged that each plant has abundance of room, and that all are arranged effectively and tastefully. Among flowering plants there are Gloxinias,

Achimenes, Gesneras, Begonias, Anthuriums, Clerodendrons, Dipladenias, Crinums and Crassulas. To these can be added a host of Orchids. If it really is desirable to maintain a gay conservatory all summer long, it will be necessary to keep up a supply and succession of flowering plants in summer as we do in winter. Hydrangeas, Plumbago, Cockscombs, Brugmansia, Ceanothus, Justicias, Erythrina, Japan Lilies, Crape Myrtle and plants of their kind are used for this purpose, and they often are supplemented by the commoner annuals. But there is a peculiar cheapness about this sort of decoration. Plants that thrive better out-of-doors than in the green-house in summer assume a very unhappy aspect when in conservatory service during that period.

Hardiness of Perennials.

THE question:—What is the test of hardiness? recurs every spring. Too often we conclude that a plant is not hardy because it does not survive the winter, under certain conditions. But a wider experience proves that a plant's ability to endure winter cold depends as much upon summer heat as upon winter climate. The conditions of a plant under cultivation, differ widely from those of the same plant in its natural habitat. Observation seems to show that perennials are more common in woods, or shady places, and moist meadows; whereas annuals mostly grow in dry and exposed situations. May we not infer from this, that exhaustion during the hot season by excessive blooming and seed producing, as in the case of Aubrietias and Sweet Williams, tends to make annuals rather than perennials of them, and lessens their ability to endure winter cold? For this reason, we can never hope, perhaps, to practice spring bedding in this country with the success attained in England. Some of the most successful gardeners in America have pronounced it uncertain. I am referring more especially, though not exclusively, to plants suitable for the rock-garden. In forming a rock-garden an eastern or south-eastern slope is certainly preferable, but culture will, I think, be attended with greater success if some shade can be secured, such as is given by large trees at some distance away, so as not to have their roots penetrating the soil in which the plants are grown.

Apart from the question of reduced vitality, through excessive heat in exposed situations during summer, the ability to endure winter is not measured by counting the degrees on the thermometer. It depends upon other conditions than the mere amount of cold. Equable conditions are required. Any plan by which we can exclude sun-light and admit air, and so prevent alternate freezing and thawing, will help. I am surprised to find *Narcissus* hardy here when I had given them up further south. *Chionodoxa Lucillæ* and *Scilla Siberica* grow and bloom beautifully when protected by a little litter. *Primula denticulata* and *Soldanella alpina*, both requiring protection in England, are strong and healthy after the winter. *Myosotis dissitiflora* and *Digitalis grandiflora*, as well as the common Foxglove, are a surprise to me this spring, knowing that they grow wild in the woods in England, and being biennials which retain their foliage naturally, I felt sure they could not survive.

Prevention of exhaustion by partial shade in summer, and a plan, such as a light covering of litter, in winter, to prevent alternate freezing and thawing, are among the most important considerations in the successful culture of hardy perennials.

Wellesley, Mass.

T. D. Hatfield.

Forget-me-nots.—From March till June Forget-me-nots, grown in cold frames like Pansies and Polyanthuses, attain full perfection. If needed for cut flowers only they may remain to bloom in the frames, but if required for out-door garden decoration in spring, about the end of March or first of April we can lift them with good balls of earth and transplant in some warm, well-sheltered spot. The finer forms of Forget-me-nots have not proved hardy here. No doubt the common marsh Forget-me-not (*Myosotis palustris*) of Europe, also some of the stronger forms of *M. alpestris*, can be naturalized in moist, somewhat shady places in the Northern States, but I have never had any of the varieties of *M. dissitiflora* or *M. Azorica* live over winter as unprotected hardy plants.

Although the Forget-me-nots are all perennials, it is only as annuals that they can be treated successfully with us. True, we may raise a young stock from cuttings or division, but from seed is by far the easiest way. It is a mistake to sow the seeds in spring; spring-sown plants grow large and leafy during summer and many of them die off in fall. Better sow the seeds in July. This will give nice sized plants for winter-

ing over in frames for next spring's blooming. Indeed, the self-sown seedlings that come up so numerous in the beds where the old plants have bloomed, make capital stock to winter over for spring work. Forget-me-nots like good soil and are impatient of drought at any time.

We have white as well as blue flowered varieties of all the common species, and rose-colored forms of some, but a blue Forget-me-not, like a Violet, is more desirable than one of any other color. For cut flowers *M. dissitiflora* is preferable, and both the blue and white varieties are good. Another one that gives great satisfaction is *M. alpestris robusta grandiflora*. It is a little later in coming into bloom than *M. dissitiflora*, but after it does come in it is cut in preference to any other. We have also the new *M. alpestris Victoria*, now in bloom and very beautiful. The plants are dwarf, very compact in habit, and copious in bloom, but while they make admirable specimens either in the frame or spring-garden, their flower branches are not long and ample enough for cut flowers.

W. F.

Onosma stellulatum, var. Tauricum.—This is a neat alpine plant of the Borage family, happily named by Mr. Burbidge the "Golden Drop." It has a semi-shrubby, trailing habit, and hairy, gray-green, lanceolate, evergreen foliage. The flowers are arranged in graceful, arching cymes, 6-10 long, bearing graceful, lemon-colored, deliciously-scented flowers, in succession along more than half their length. It is perfectly hardy in the United States, having been thoroughly tested. It has never, to my knowledge, produced seed, but cuttings taken in spring from plants housed during winter, just after commencing new growth, and with a heel of old wood, which last is absolutely essential, strike easily in a temperature of 50°. The foliage must not be kept damp, so an ordinary glass cutting box will not do so well as the open bench. Young plants planted out in spring make handsome specimens by fall, and if taken up and potted in 6-inch pots will bloom beautifully during the late winter months—February and March. This *Onosma* is both rare and beautiful. It ought not to be rare in this country, for it is propagated far more easily here than in England, where it is much admired, and always sells at a comparatively high price, solely on account of the difficulty in its propagation.

T. D. H.

Mackya bella.—Fine racemes of the handsome flowers of this plant, which botanists now consider a species of *Asystasia*, were shown at a recent exhibition of the Massachusetts Horticultural Society, from the gardens of Mrs. F. B. Hayes, at Lexington. It is a native of Natal, and has not been in cultivation very long, having been introduced into English gardens in 1869 by its discoverer, Mr. J. Sanderson. It is a tall, slender shrub, with virgate branches, producing terminal racemes of pale lilac, campanulate flowers, the throat of the corolla delicately penciled with purple veins. It is a member of the *Acanthus* family. *Mackya bella* is a free growing green-house plant, but it requires special treatment to induce it to flower freely. It should be encouraged to grow vigorously in summer, during which period it requires an abundance of water. During the winter months water should be withheld, and the plant, which loses its leaves, allowed a period of entire rest. Thus treated it will flower profusely along the ends of all thoroughly ripened shoots. *Mackya* is one of those plants which repays the care necessary to induce it to flower freely, and should be more generally grown than it is in this country at present.

S.

Fragrant Herbs for Edging Plants.—Fragrant herbs, as Thyme, Marjorum and Savory, are the delight of many an old country garden, and as they grow so neatly and are so easily raised from seed, there is no reason why we cannot have them here, and in abundance. As edgings to little beds or borders of mixed plants they are neat and appropriate. Both the broad leaved and lemon Thyme are perfectly hardy; Savory and Marjorum seldom live over winter, but they quickly make good plants from seed sown in spring. All the variegated leaved varieties of Thyme are also hardy enough, but must be increased by division or cuttings, as they do not perpetuate their variegation from seed. To these add Lavender, and if desirable its flowers can be cut off. Two other fragrant plants of stocky habit, and well fitted for edgings, are *Calamintha alpina* and *Thymus patavinus*; both are easily obtained from seed.

Strawberries and Birds.—Cat-birds and robins are more destructive to the crop just as the berries are beginning to turn than later on when the full crop is ripe. The best way to circumvent the birds in a small home-garden is to erect a temporary frame around and over the bed, and spread over it a fine-meshed seine or fish net. Instead of a

seine, mosquito netting can be used, but the seine is very much better, as it is no impediment to wind or air, and with it there is no fear of the berries mustering, by being kept too close, moist or warm. Get stakes about eight feet long, place them around and across the beds and about ten feet apart, and drive them about eighteen inches deep into the ground. Then take factory-cut bass-wood strips (each sixteen or more feet long and costing one to one and a half cents) and tack them against the posts on the border of the bed, and from post to post over the top. Then spread the netting over this frame. Sometimes, instead of the bass-wood strips, marlin can be used over the top. This gives a canopy six and a half feet high, leaving perfect freedom for picking the berries. The frame costs very little and the same stakes can be used for the same purpose for many years.

Cut-Worms.—From now till the end of June cut-worms are most destructive and they always are worse in sandy than in stiff clay land. They are especially fond of young beets, cucumbers and melons, but almost any tender young vegetable attracts them. No practicable means of poisoning, trapping or destroying them in any other way than by hand picking has, so far as I know, been discovered. Examine young crops in the morning, and whenever you observe that some of the plants have recently been cut, remove a little of the soil from about the plants and probably the depredator will be found.

The Rock-Garden in Spring.

ONE of the most interesting plants flowering in the rock-garden this week is a form of the Dogtooth Violet from the mountains of Oregon and Washington Territory (*Erythronium grandiflorum*, var. *albiflorum*). It sends up from long, narrow corms, broad leaves, conspicuously blotched with purple, and tall, slender racemes of two to six nodding, lily-like, long-pediceled flowers, which, when fully expanded, are nearly three inches across. The segments are pale yellow, dashed with orange towards the base, with darker orange spots on the interior face. The hardness of this exceedingly beautiful plant has not been fully established here, but if it is planted in an open, well drained situation it will probably flourish.

Several handsome Tulips are now in flower. The most showy of these, perhaps, is *Tulipa elegans*, a form which is known in gardens only, and which Mr. Baker considers a hybrid between *T. acuminata* and *T. suaveolens*. It produces large and handsome bright red flowers, three to three and a half inches long. The base of the segments are beautifully marked on the interior with a yellow eye. They are nearly uniform in shape and are narrowed gradually to a very acute point. This is a very hardy plant which will flourish and increase in any good garden soil. Very satisfactory here, too, is *Tulipa sylvestris*, the European Wood Tulip, a common plant from Norway to the Caucasus. Its handsome, clear yellow, fragrant flowers, one to two inches long, somewhat nodding before they are fully expanded, are borne on tall flexuous scapes. The leaves, of which there are generally three below the middle of the flower stem, are glaucous, smooth and channeled, and often more than a foot long. Less showy than many of the higher colored Tulips, this is an exceedingly graceful and pretty plant. It is perfectly hardy, and blooms freely year after year, requiring no special care or cultivation. A much rarer plant, is the pretty little *Tulipa undulatifolia*, which Mr. Elwes discovered a few years ago on the Bozdagh range of mountains near Smyrna. It is a dwarf plant which is here not over three or four inches high. The leaves are glaucous, the lowest six inches long and one inch wide, the others much narrower, concave on the face with undulate margins. The handsome campanulate flower is bright crimson-red on the inside and dull greenish red without. The segments, which are handsomely marked on the inside, with a large black blotch, surrounded with a bright yellow border, are all gradually narrowed into a long acute point. This is a hardy species here, but it does not grow with any great vigor, and shows no inclination to increase. Another of the fine new central Asia Tulips (*T. Kalpakowskyana*) does admirably here. It is a native of Turkestan, where it was discovered by Dr. Albert Regel, who introduced it into the St. Petersburg Garden. Here the color of the flower is a bright cherry red, with a dull blackish eye, and black filaments and anthers, but it is described as a variable species, sometimes producing yellow flowers flamed with red on the exterior of the outer segments, and sometimes pure yellow flowers with a dark eye and yellow anthers and filaments. This species here

attains the height of a foot, and produces flowers nearly two inches long. It is very hardy and is gradually increasing.

The Painted Trillium (*T. erythrocarpum*) is a far less showy plant than *T. grandiflorum*, but it is a pretty and attractive species well worth a place in the rock-garden, where it seems to flourish, although its home is in the cold, wet woods of northern New England and far northward. The flower is erect with oval-lanceolate, pointed, widely spreading petals, which are pure white, painted at the base with purple stripes. It flourishes in a partially shaded exposure, and requires the same soil and treatment necessary for the other species of the genus.

Persons who value only plants with showy flowers will hardly care to cultivate any of the species of *Asarum* or Wild Ginger—low herbs, with kidney-shaped or heart-shaped leaves, which completely hide the inconspicuous flowers, not unlike, in general structure, those of the well-known Pipe-Vine (*Aristolochia Siphon*). *Asarum Canadense*, a common plant in northern woods, is now in flower, and well fills a shaded pocket in the rockery with a mass of handsome membranaceous kidney-shaped and softly pubescent leaves, which look bright and fresh throughout the summer.

The Virginia Cowslip (*Mertensia Virginica*), an old and well known inhabitant of gardens, is handsome in the rockery or in the mixed border. It is a smooth, very pale, erect plant, one or two feet high, with obovate leaves, and rich, purple-blue, trumpet-shaped, nodding flowers in short raceme-like clusters. This *Mertensia* needs no special care or cultivation, and thrives in all exposures, and in any rich loam. It can be increased by division of the roots, or by seed, which should be sown as soon as ripe.

Dicentra eximia, one of the plants to which the name Dutchman's Breeches is commonly applied, is in flower several days later than the more delicate *D. Cucullaria*. It has bright green, three-lobed, deeply cut, handsome foliage and rather tall scapes, with compound clustered racemes of drooping red or flesh-colored flowers, nearly an inch long, with the crest of the two inner petals of the heart-shaped corolla projecting above the outer petals. This is a coarser leaved plant than the other American species of this genus, and is much more rare, being confined to a few localities in western New York and to the Alleghany Mountains of Virginia. It takes readily to cultivation, however, and has now covered a considerable piece of ground in a rather exposed part of the rockery. It can be easily increased by the division of the subterranean scaly shoots.

Few of our northern wild flowers possess a greater charm than the graceful and delicate little plants popularly known as Spring Beauty, two tuberous rooted species of the genus *Claytonia*. *C. Virginiana*, the more southern of the two species, and easily distinguished from *C. Caroliniana* by its long-linear-lanceolate leaves (those of *C. Caroliniana* are spatulate-oblong, and only one to two inches long), is now thoroughly established here, and is blooming freely in one of the driest, and in summer most deeply shaded parts of the rockery. The pretty, rose-colored flowers in loose racemes close in the evening, but continue to open during several days.

Anemone ranunculoides is a tuberous rooted European species with deeply parted leaves and involucre, and with the general habit and stature of our common wild Wood Anemone, but with rather coarser foliage and clear bright yellow, instead of white or rose colored, flowers. It is an exceedingly pretty little plant, widely distributed, and not infrequently cultivated in Europe, but rarely seen in this country.

Among the few perennial plants of California which find themselves thoroughly at home in eastern gardens, the handsomest, perhaps, is the great peltate Saxifrage (*S. peltata*), which inhabits the beds of rapid mountain streams in the northern Sierra Nevada. This plant, which is one of the largest of the entire genus, sends up in early spring, before the appearance of the leaves, from thick, creeping root-stalks, tipped with broad green stipular leaf-sheaths with membranous pink margins, glandular scapes one or two feet high, bearing dense, branched cymes of handsome, large, pale pink flowers. The leaves which appear later are peltate, round, twelve to eighteen inches across, and are borne on stout, glandular petioles, sometimes two feet high. This fine plant requires, in order to develop all its beauty, a rather moist situation near a brook or along the borders of a pond. Here it will spread rapidly, and soon makes a great mass of foliage, which retains its beauty throughout the summer. It is now in full bloom.

The great interest which has been felt in England of late years in the cultivation of the Narcissus has given rise to several fine seedling forms of the Daffodil (*Narcissus Pseudo-Narcissus*) which command high prices as novelties.

None of these, however, equal the two old varieties, N. Emperor and N. Empress, raised many years ago by William Backhouse, of Walsingham, by crossing *N. Pseudo-Narcissus* with its variety with white perianth-segments, *N. bicolor*. Narcissus Emperor has immense, clear yellow flowers, while those of N. Empress resemble those of *N. bicolor*, although much larger and finer. They are stately and splendid plants, with immense deep-cupped flowers and broad, glaucous leaves, and it is not easy to imagine any product of the soil more beautiful than a great mass of these plants in flower. And yet how very seldom are the finest varieties of Narcissus seen in American gardens, and how few Americans know and appreciate their beauty!

Boston, May 20th.

C.

Notes from the Arnold Arboretum.

THE beautiful Cherry Plum or Myrobalan is now blooming profusely. It is the *Cerisette* of the French and the *Kirschplauwe* of Germany. It is a small tree here, hardly exceeding ten feet in height, with upright, unarmed, glabrous branches, the shoots of the previous year covered with chestnut or yellow-brown bark. The large white flowers appear simultaneously with, or just before, the unfolding of the leaves. They are one-half to three-quarters of an inch across, with lanceolate, glandular, reflexed calyx lobes and ovate-oblong, orbicular petals, and are borne on long, slender, glabrous peduncles. The leaves are ovate-acute, serrate, and sometimes slightly pubescent on the under side when young. The fruit is small, half an inch in diameter, depressed globular, scarlet, or on one tree in the collection bright, clear yellow, and of rather pleasant flavor. The Myrobalan Plum is an exceedingly hardy plant of no small ornamental value, which is very considerably heightened by the fact that, unlike most Plum trees, its flowers and leaves appear at the same time. This tree has long been known in cultivation. Its affinities and its native country even have never, however, been satisfactorily determined. The earlier European botanists, down to the time of Duhamel, supposed that it had been brought from America, but it has no connection with any American plant. Linnæus considered it a variety of the Common Plum (*P. domestica*), from which its glabrous peduncles, globose fruit and earlier flowers distinguish it. Loudon refers it also to *P. domestica*, which he considers to be a cultivated form of the Bullace Plum (*P. insititia*), from which he considered the Myrobalan to be "the first remove." Koch, an excellent authority in questions relating to the origin of cultivated fruit trees, considered it a form of *P. cerasifera*, to which he united the Caucasian *P. divaricata*—a view which finds some confirmation in the reflexed calyx lobes of our plant, and in the fact that its flowers are simultaneous with or precede the leaves by a day or two at most. And lastly, Sir Joseph Hooker, while he adopts Koch's name of *P. cerasifera*, considers "that both *P. cerasifera* and *P. domestica* are cultivated states of *P. insititia*," separating, apparently, the former from the Caucasian species. The flowering branch in his figure (*Botanical Magazine*, t. 5934), derived from the gardens of the Royal Horticultural Society, with precocious flowers, densely fasciated on short lateral branches, a character not given, as he himself points out, in any of the published descriptions of the Myrobalan Plum, can hardly belong to this plant. The Myrobalan Plum, unless Koch's views as to its Caucasian origin are adopted, although cultivated for centuries, is nowhere known in a wild state. A Plum, raised from seed brought from Turkestan and sent to the Arboretum by Max Leichtlin, is identical with the plants of European origin, but whether the Turkestan seed was derived from wild or from cultivated trees is not known.

Prunus Pissardi, a purple-leaved Plum, which of late years has become very common in gardens in this country, is now in bloom, and cannot be distinguished, except in the color of the foliage, calyx, peduncle and fruit, from the Myrobalan Plum. The habit, flowers, fruit and foliage here are otherwise identical in these two plants. *Prunus Pissardi* bears the name of the French gardener of the Shah of Persia, Pissard, who sent it to Europe about 1880. It is said to have originated in the City of Tauris, not far from Teheran, where it is valued for the color of its foliage and for its handsome, blood-red fruit.

The double-flowered form of *Prunus Pseudo-Cerasus* is in bloom. It is a very handsome and hardy Japanese Cherry, resembling some of the double-flowered varieties of the common Cherry, from which, however, it may be readily distinguished by the solitary forked peduncles conspicuously bracted at the base and below the forks, and by the emarginate petals. This double-flowered Cherry is one of the most common and most highly valued garden plants in Japan, where many varie-

ties are known with flowers varying from nearly pure white to pale pink, and with a greater and a smaller number of petals. The single-flowered type of the species, which is pretty generally distributed throughout Japan, and is found also in Manchuria, has not flowered yet in the Arboretum. The double-flowered variety was introduced into Europe from Japan in 1864 by Robert Fortune, and has since been described and figured under various names, of which the oldest is *Cerasus Pseudo-Cerasus rosea-plena*. It is also known as *Cerasus Sieboldi* (*Revue Horticole*, 1866, p. 371), *Cerasus Capronia fl. roseo-pleno* (*Fl. des Serres* xxi., p. 141, t. 2238), and very commonly in nurseries as *Cerasus Watererii*. The best figure will be found in Lavallée's "*Icones*," t. xxxvi. In this country the Japanese Double Cherry is a small tree, rarely exceeding ten or twelve feet in height, with the general habit and appearance of a small Cherry tree. It is very hardy, but does not display much vigor of growth nor flower as freely as the common double Cherry. The deep pink flower-buds and the much paler pink flowers are, however, exceedingly attractive. The branching solitary peduncles sometimes appear clustered, owing to the closeness of the buds upon the ends of stout lateral spurs from the wood of the preceding year; and the effect of the flowers is heightened by their contrast with the handsome bronze-colored young leaves, which are ovate-lanceolate, abruptly acuminate, sharply serrate, six or eight inches long, pubescent when young, but later quite glabrous, the large, conspicuous, three-lobed, pinnatifid, glandular stipules nearly as long as the conspicuously biglandular petioles. The black fruit is described as being the size and shape of a pea.

Prunus Americana, the common wild yellow or red Plum of northern woods and an inhabitant of most gardens in northern New England and Canada, should be mentioned here as an early flowering ornamental plant of very considerable value. It is a small shrubby tree, rarely exceeding twenty-five or thirty feet in height, with thorny, rigid branches, which are now entirely covered with umbel-like clusters of small white flowers with conspicuous scarlet calyx-lobes. Of two forms in the Arboretum, one derived from northern Vermont flowers more than a week earlier than Western plants, upon which the leaves are nearly half grown when the flowers open. The fruit of this species is roundish-oval, yellow, orange or red, and has a pleasant flavor, although the skin is tough and sour. The wild Plum is exceedingly hardy; it grows rapidly and thrives in all soils and exposures; and when well grown makes, at this season of the year, an exceedingly attractive and beautiful appearance.

It is perhaps of interest to note that in the very large collection of Spiræas, *S. Thunbergii*, one of the most beautiful of the genus, is also the earliest in flower by several days. It is a native of Japan, where it is very common throughout the islands, in elevated valleys and on rocky hill-sides in the mountainous districts. This is one of the few plants which is attractive from early spring to very late in the autumn. No shrub produces a greater profusion of handsome flowers year after year; its habit is at once compact and graceful, and the delicate willow-like foliage of a peculiarly bright and cheerful color throughout the summer, in autumn, long after nearly every other deciduous shrub has lost its leaves, turns first to a deep bronze, and then to a brilliant orange and scarlet color. It is well worth planting for the beauty alone of its autumnal colors. And this is true as well of another Spiræa, which is also a favorite in Japanese gardens, although originally a native of northern China—the double-flowered form of *S. prunifolia*, which is more often seen perhaps in American gardens than any species of the genus. It is a very hardy plant, which spreads rapidly, soon making a large, dense clump of rigid, upright stems. It is one of the least beautiful of the Spiræas, however, in habit, and the small, very double white flowers are not handsome, but the colors which the foliage takes on in autumn are splendid in the depth and richness of their scarlet tints. The single-flowered type of this species is wanting in the Arboretum collection. The ends of the branches of both these Spiræas are sometimes killed back here a few inches in severe winters. Otherwise the plants are perfectly hardy, and never fail to flower profusely.

Ribes Gordonianum is in flower. It is a hybrid, raised many years ago in England, between *Ribes aureum* and *R. sanguineum*, and is a handsome and very hardy plant, with the habit and showy racemes of *R. sanguineum*, but the flowers are lighter colored. It is by far the handsomest of the Currants which are perfectly hardy here. Among many American species of this genus now in flower, *R. cynosbati*, the wild Gooseberry of our northern woods, may be mentioned as a plant worth introduction into ornamental shrubberies. It is a compact shrub, which attains, under favorable conditions, a height

of three or four feet, with dark green, round, heart-shaped, three to five lobed leaves, and slender two to three flowered peduncles. The berry is large, armed, like a burr, with long prickles or rarely nearly smooth. The wild Gooseberry thrives in all soils and exposures.

Botanists are familiar with *Andromeda polifolia*, but it is too rarely seen in gardens, although, like many other plants which are only found growing in their natural state in cold, deep peat bogs, where they are often almost entirely submerged in water, this beautiful evergreen takes kindly to cultivation and flourishes and flowers in a garden border as freely as in its native swamps. In cultivation *Andromeda polifolia* makes a handsome, compact mass of foliage two or three feet across, and ten or twelve inches high. The leaves are about an inch long, oblong-lanceolate, dark green above, white on the under side, with the edges conspicuously rolled back. The pale pink or flesh-colored, bell-shaped flowers are produced on long pedicles in short terminal racemes or clusters, and continue to appear during several weeks. *Andromeda polifolia* is widely distributed in North America from Pennsylvania far northward; it is found on the North-west Coast, in northern Asia, in northern and on the high mountain ranges of central Europe. 7.

The Forest.

Tree Notes.

AFTER passing through the intense heat and continuous drought of last summer and the extreme cold of the past winter, many important observations can be made as to its effect on trees in different localities, and as is usual after such severe seasons, the statements will be conflicting, and many cases reported that neither science nor practical experience can account for. In localities where there were seasonable fall rains, trees will be found to have suffered less than where they went into the winter without sufficient moisture at the roots; further than this I have no opinion to offer, for in my experience, each severe winter has had a different effect from the previous ones.

As I spent the past summer and winter on the Pacific Slope I have not had an opportunity to examine the damage done here, but I took a deep interest in the effects produced there, where it was unusually cold for a few days, even to forming ice in some spots in the San Gabriel valley.

Tender herbaceous plants and Palms were injured in some places—the latter very slightly—while they escaped unhurt in others. The varying effect upon exotic trees was noticeable. In one part of the valley I saw the Rubber tree four or five years transplanted and having made a $2\frac{1}{2}$ to 3 feet annual growth, cut back or injured for nearly 3 feet, while in other places a mile or two distant I saw the same tree over 30 feet high, not even injured in the terminal bud.

Two reasons might be given, either of which would account for this difference. The younger tree, irrigated and growing very rapidly, would not be in as good condition to withstand a slight freeze as the more mature tree with a more gradual and better ripened growth. The older tree stood nearer the mountain, consequently the cold north wind could not reach it as it did the tree further off in the valley.

The people in California said they had not experienced such a cold wave for fifteen years; this I could believe, as they had nature for an endorser. Trees always tell the truth and they told it very plainly.

The effect of a hard winter in the desert and on the mountains where nature had full sway was still more interesting. Even among the Sages, Greasewoods, and the numerous shrubs and plants on the desert I could see many that showed the effects of an unusually hard winter for that climate, but as we climbed the mountains the effects were most plainly visible.

The shrubs and plants which had crept up the side of the mountain from the edge of the Desert grew smaller and more shrubby at every step. The western Juniper

and one of the evergreen Oaks, particularly arrested my attention. They had grown on year after year, making a very short growth each year, and holding their leaves, but last winter cut off many years' growth, the foliage still hanging on red and lifeless.

As we ascend the mountain higher and higher one plant after another drops out, until at last we find only the irrepressible Yellow Pine, *Pinus ponderosa*, standing majestically alone, tall, noble shafts, now in masses, again in groups, and then a single tree, with short grass nearly covering the ground in the open spaces. For many miles east and west of Flagstaff, Arizona, these trees form an immense park, and although one species, present so many forms on hill, crag, plain and valley, that the forest does not strike one as being monotonous.

As we gradually descend we find now and then a few diminutive deciduous Oaks, Poplars and wild Roses. The valleys, plains and open spaces intersecting this immense forest are covered with a short species of bunch grass nearly covering the ground, giving them somewhat the appearance of a well kept lawn, as there are no shrubs and few young trees intermixed. The trees stand much further apart than in eastern forests, and as they are entirely free from branches for nearly two-thirds of their whole height, the view extends far in among the tall straight trunks, and is much to be admired, the light cinnamon colored bark having a pleasing effect.

Sheep, cattle and horses are feeding on the grass, and the saw mills are devouring the timber. These forests are already doomed. Few seedlings are springing up to take the place of the older trees, and these will not be able to stand alone and bear the severity of the hot sun and parching desert winds. These forests have stood till now in spite of all the hardships they have had to encounter, but dollars and cents are too much for them! there is money in them, so they must go!

We call the Indians savages! Yet they have more forethought in this case than the white men. They have roamed among these forests from time immemorial, and they have made their mark on the Yellow Pine, for we see that when food is scarce in the early summer, they take strips of bark from the large trees, and eat the mucilaginous part of the immature sap wood, but they never take the strip wide enough to kill the tree, going from one tree to another and not peeling over one-quarter of the circumference of the trunk, so that the tree receives little or no damage.

Robert Douglas.

Correspondence.

To the Editor of GARDEN AND FOREST :

Sir.—As the season approaches in which the bloom of the Ailanthus distresses persons in its vicinity, I am impelled to offer some information with regard to this tree.

It is usually spoken of as a valuable tree for planting, despite the disagreeable odor of its blossoms. Its rapid growth and beautiful foliage make it a favorite with many, and comparatively few are acquainted with its deleterious influence. I am told by a citizen of Boonsboro, Md., that at one time there were many victims to consumption in that place. Physicians were puzzled to account for its prevalence in what was formerly a healthy mountain town. One doctor called the attention of the fraternity to the fact that the cases were in one particular section of the town, and it was discovered that the trees in that end were principally Ailanthus. The fact came out by inquiry that in each case, where there was not hereditary tendency, the patient had first an annual attack of a strange sickness in June, which lasted but a few weeks. The stomach would be disturbed and a peculiar sore throat was one of the symptoms of the temporary sickness. After a few years the throat became chronically sensitive, but was always worse in June, and, eventually, consumption set in.

The particular time in June when this disease prevailed was during the blooming of the Ailanthus. I have been told that legislation was secured in Ohio to prevent the planting of this noxious tree. In my own town there have been marked cases of sickness resulting from propinquity of this tree.

Last summer several families in different parts of town were obliged to call in a physician to treat a sore throat that "went through the family." Several were in bed for more than a week, suffering with nausea, extremely sensitive throat, inability to take any food, inability to sleep at night, a desire to have the air filtered to prevent inhalation of poisonous particles. In each case an *Ailanthus* was in blossom in the neighborhood.

The Hay-Fever Association might obtain interesting statistics if a thorough investigation would be made. Several persons visiting in town were attacked with acute hay fever symptoms, lasting three weeks; but after the bloom was over these symptoms gradually disappeared. These persons had never before been troubled with such affections, nor had they ever before been in the vicinity of an *Ailanthus* in full bloom. A remarkably healthy child was one of the victims, and she did not regain her usual health until the following October.

A hay fever patient for many years had a three weeks' sickness in June, and could not account for the distressing sore throat, influenza and constant nausea. Finally it was observed by friends that this came on during the blooming of the *Ailanthus*. At length hay fever set in, and it was found the latter disease was but an aggravated form of the June attack.

Is it not time that such facts should be published and communities be protected from health-destroying influences?

Hagerstown, Md.

C. V. Tice.

[What we believe to be an entirely unfounded belief in the injurious properties of the *Ailanthus* tree has taken possession of communities in this country at different times and in different places. The flowers of the male tree have an exceedingly disagreeable odor to many persons, and as they produce large quantities of pollen, people liable to attacks of hay-fever would be affected by it, in the same way that the pollen produced by any other plant in equal quantities or by dust would affect them. We have never seen any well substantiated statement of persons supposed to be affected by the *Ailanthus* obtaining relief by the destruction of the trees; and it seems not improbable that the particular cases to which our correspondent calls attention have been the result of malaria or improper drainage or impure drinking water—a belief sustained, in part at least, by the fact that the *Ailanthus* is one of the most commonly planted, and most highly esteemed trees in Paris and other European cities, while its bad reputation, so far as we can learn, is confined to this country. As it is only the flowers of the male plant which are disagreeable, all risk, real or fancied, in planting this tree can be obviated by selecting the female plants only. The influence of the *Ailanthus* upon persons with catarrhal tendencies is a matter of much general interest, and we shall be glad to find room for a statement of well authenticated cases where this tree has been the cause of sickness.—Ed.]

Notes.

Mr. T. S. Brandegee has lately explored Santa Cruz, a small island off the California coast possessing an interesting vegetation which differs in some of its features in a remarkable manner from that of the adjacent coast, and which was first made known a year or two ago by a paper published in the Proceedings of the San Francisco Academy of Sciences, by Mr. Edward L. Greene. The object of Mr. Brandegee's visit to the island was to procure wood specimens of its peculiar trees for the Jesup collection of North American woods in the American Museum of Natural History in this city. This Mr. Brandegee has accomplished, having secured fine specimens of an oak, *Quercus tomentella*, not known within the limits of the United States, except on this Island; of *Lyonothamnus asplenifolius*, a very beautiful small tree attaining a height of forty feet, a representative of a small genus of the Saxifrage family peculiar to this little group of islands, of which a second species, a tall shrub, is known. This plant is interesting as the only arborescent member in North America of a family, which is very widely and generally represented in our flora by humbler plants. The silva of Santa Cruz Island contains also a very handsome arborescent *Ceanothus* (*C. arborescens*), which has not been found elsewhere. *Rhamnus insularis*, and a peculiar form of the mainland *Prunus ilicifolia*, are also interesting trees peculiar to this island. Mr. Brandegee's visit has, he believes, added nearly two hundred species to its flora.

Mr. C. G. Pringle, some of whose interesting sketches of Mexican vegetation have already appeared in this journal, has now started for another long botanical journey in northern Mexico. He will proceed by rail to Lerdo, a town on the Mexican Central Railroad, about three hundred miles from the city of Chihuahua, and then travel by wagon through the Lagoona country practically over the route followed by Wislizenus half a century ago, to Saltillo, Monterey and Matamoras, where he will collect wood specimens of some of the trees peculiar to the valley of the lower Rio Grande, for the Jesup collection. Mr. Pringle then hopes to explore some parts of the Sierra Madre of Nuevo Leon, a region still very slightly known botanically, and then later return to Chihuahua and the region which he visited last year in time to collect the flowers which only appear after the rains of midsummer.

Retail Flower Markets.

NEW YORK, June 1st.

The large sales of small plants for Decoration Day were made at wholesale rates. The supply of flowers continues abundant and prices are low. Baroness Rothschild and Anna de Diesbach Roses are the finest of the hybrids. Selected ones cost 40 and 50 cts. The average run cost 25 cts. American Beauties cost the same. Gen. Jacqueminots are large and have improved during the week in length of stems. They are \$2 a dozen. Bennetts and Madame Cuisins are \$1.50 a dozen. Brides and Catherine Mermets are unsatisfactory in quality. They are 15 cts. each. Perles, Niphets and Souvenir d'un Ami cost \$1 a dozen. Papa Gontiers are of good size and color and they sell for 75 cts. a dozen. Bon Silenes are 50 cts. a dozen. The demand for specimen Hydrangeas has been fair throughout the week. Plants have sold from \$1.50 to \$5. Pink Peonies are plentiful. They bring from 15 to 25 cts. each. Lilac costs 50 cts. a bunch. Mignonette is from 40 to 60 cts. a dozen. Carnation costs 35 cts. a dozen and Pansies 25 cts. The yellow Paris Daisies bring 50 cts. a dozen. They are plentiful and popular. Daisies are 25 cts. a dozen. Violets are small and bring 75 cts. a dozen. Lily-of-the-Valley is out-of-door grown, but large and handsome. It is 50 cts. a dozen. Smilax is 30 cts. a yard. Asparagus costs from 75 cts. to \$1. In most of the baskets made up for souvenirs, shrub blossoms are clustered in one side, while Roses fill the other. Sweet Pea blossoms arrive in small quantities and bring fancy prices.

PHILADELPHIA, June 1st.

The demand for all choice flowers was very heavy until the middle of this week, owing, in a great measure, to the festivities connected with the visit of Mrs. Cleveland. Pansies, the favorite flower of the President's wife, were in especial demand. As a matter of course all varieties of flowers were in request on Decoration Day. Flowers are generally very plentiful now, excepting White Carnations, which still remain quite scarce. Thousands of the wild Daisy are brought into town, and florists report large sales every day. Roses are falling off in color and size, American Beauty being the best now on sale, and fine ones sell for \$5 per dozen. Meteor is the best crimson Rose now; it is brighter in color than Jacqueminot, as seen at this season of the year, and it retains its bright color longer than any other in the same class; as a Rose for summer blooming under glass it is destined to rank very high. Gardenias are becoming more popular as a flower for evening wear. A very few Sweet Peas are offered at \$1.50 per dozen. These dainty flowers are deservedly increasing in favor each year. Corn-flowers are also offered at 50 cts. per dozen; these vary in color from pure white to purple, pink, blue and yellow. Some Forget-me-nots may yet be had, but it is only by careful growing that it is presentable at this late season. General prices remain about as they were a week ago, with a fair demand and plenty of flowers.

BOSTON, June 1st.

As predicted last week, the stock of cut flowers in this market for Decoration Day ran short, and prices were correspondingly high. Roses of the commoner kinds and Carnations were more than double the usual prices. Fancy Roses did not feel the pressure so much. There is no Lily-of-the-Valley in the market excepting the small outdoor variety. Red and bright colored flowers in general are scarce, and bring high prices in the wholesale markets. There has been an abundance of double white Stocks and Spiræa; also a fair supply of white Lilies, all of which were very useful for Decoration Day purposes. One grower here forced a lot of Canterbury Bells, which met with a ready sale, there being no other blue flower obtainable. Its beautiful color and graceful form make it a welcome addition to the small list of really effective flowers available for basket work at this season of the year. Prices of staple varieties by the dozen are as follows: Hybrids, \$6; Jacqueminots, \$3; Mermets, Perles and Sunsets, \$2; Niphets and Bon Silenes, \$1; Carnations, 50 cts.; Lilies, \$2; Lily-of-the-Valley, 50 cts.; Stocks and Spiræa, \$1; Pansies, 25 cts.; Mignonette and Heliotrope, 35 cts. Smilax is of better quality, and worth 50 cts. a string of four to five feet in length. But few corsage bouquets of florists' flowers are worn on the street at present, Apple Blossoms, Wild Violets, Anemones and the like having the preference while they last.

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Horticulture and the Experiment Stations.

AMONG the appropriations made by Congress for the current year is the item of \$685,000 for Agricultural Experiment Stations. By the terms of the act establishing a station in every state, this sum is to be added annually by the Federal Government to the appropriations made by the several states for the same purpose. This liberal endowment ought to mark an era in the country's agricultural progress. We have a right to expect important additions to our knowledge from the labors of the large number of educated men who will be selected for the express purpose of investigating problems connected with the soil and with plant growth. Horticulturists, no less than others who till the soil, are looking towards the new institutions with mingled curiosity and hope, for they have the same need of instruction and an equal right with farmers to expect that their special wants will be considered. Every intelligent gardener and fruit grower is conscious that he is confronted on every hand by problems which he cannot solve, and that his success is menaced by enemies whose attacks he feels powerless to repel. If he knew how to mitigate, in a greater degree, the effects of drought, how to feed his crops more cheaply, how to wage a more hopeful war against the insects and plant diseases which beset him in increasing numbers every year, and how to select varieties that are best adapted to his conditions, his labors would command a more satisfactory reward. The experiment stations were created to answer questions of this kind, and if careful investigation will avail in solving them, horticulture should reap material advantage from the money, time, labor and study expended.

There is no reason why the claims of horticulture should be slighted at any station; indeed, there are special reasons why they should receive marked attention. The products of the orchard and the garden are not inferior in importance to those of the field, and they are quite as indispensable to the general health and comfort. The operations of horticulture are more concentrated than those of other departments in the broader field of agriculture, so that practical cultural questions come home with greater force to the gardener and fruit grower than to the

farmer. Land devoted to horticultural use almost invariably bears a heavier burden of taxation than that devoted to ordinary farming. It requires a greater comparative outlay for labor, for fertilizers and for seed. The injuries to orchard and garden by bad seasons, and by destructive insects and diseases, are more disastrous than those from which the farm suffers, because the crops have a higher money value.

It is gratifying to note that these facts seem to be recognized by the stations, for in the majority of those that have been organized thus far, a horticulturist has been added to the staff of experimenters. The prospect would be more encouraging if the officers selected for this duty were men of wider experience. The natural excuse for appointing untrained men to these important positions is, that the supply of such men is not equal to the demand; that it is impossible to find in the country a sufficient number of skilled horticulturists to take charge of the work in so many stations. But the fact remains that no honest effort has been made to discover men of the requisite ability in this direction or at least no sufficient inducement has been offered to make the position a desirable one. In most cases inadequate salaries are offered for this branch of station work, which means that the Boards of Control consider horticulture of subordinate importance and are willing to take inferior men, with the prospect of inferior work. It is worth noting that in one of the stations, at least, a florist has been appointed, and it may be added that there is no good reason why an industry of such magnitude as commercial floriculture should not be represented in this work. And when we consider how much attention is paid to the cultivation of flowers and plants for ornament throughout the country, this certainly would seem an appropriate field for investigation and popular instruction.

It may be well to warn gardeners and fruit growers not to expect too much from the young stations. To the novice, the making of experiments may seem an easy task, but experience proves that few things are more difficult than the gathering of accurate and helpful information in this way. The highest skill is demanded in every operation, and with this must be united close observation and a faculty for gathering in every related fact for purposes of generalization. The experimenter must not only have unswerving intellectual honesty, but a trained ability to weigh evidence and a cool judgment that is never swayed by a preconceived hypothesis. And yet he must be adventurous in constructing theories, for mere machine-like accuracy in weighing and measuring can never take the place of the creative genius which originates hypotheses. A great discovery in science was once well characterized as an "inspired guess." But it is only the mind well equipped by study and in perfect command of all its resources that invents a sound theory so easily and naturally that it seems to be only a lucky guess. With so many raw recruits just entering the experimental field, it will be fortunate, indeed, if costly mistakes are not made. For a time, at least, it may require greater wisdom on the part of the practical cultivator to separate the true from the false in the bulletins borne on every mail than was exercised originally in preparing them. But a beginning must be made, and while we need not be over-hopeful of immediate results, it is safe to anticipate signal advantage to horticulture and agriculture from the stations, when their work is thoroughly organized and systematized. Capable Directors and their assistants will become more useful with larger experience. Under the searching criticisms of the press incompetent men will be weeded out and the work will at last fall into the hands of those who will prosecute it with wisdom, devotion and enthusiasm. It may require years of patient waiting before the new stations become as helpful here as they have proved in Europe, but some of the older ones already justify every reasonable hope of their founders. In future numbers we hope to indicate some of the more promising lines of investigation which should be pursued in the interests of horticulture.

ACCORDING to the English papers an extraordinary piece of tree planting has been undertaken in Wales. On the side of Moel Rhiwen mountain a loyal enthusiast, Mr. Assheton Smith, is inscribing in letters formed with trees, and each six hundred feet in length by twenty-five feet in width, the words "Jubilee, 1887." The first trees were planted with much ceremony on the Queen's jubilee day; 630,000 trees will be needed to complete the giant inscription, and two hundred men are constantly employed upon the work. It is not pleasant to think what an amount of good planting might have been accomplished if a different direction had been given to the expenditure of all this energy and money, which now will go merely to disfigure a whole country-side with a colossal monument to wastefulness and bad taste. And, what is worse, so liable is a modern nation to be led astray by any conspicuous novelty, Mr. Smith may find many admirers, and, perhaps, an imitator or two—a supposition justified in the fact that no English journal which we have seen has uttered a protest against his scheme.

No planting as bad as this has yet been done in America, and it is doubtful, perhaps, whether anything quite so bad in disfiguring nature has ever been deliberately attempted before anywhere.

Tree-planted letters, however, are not a novelty. In the hunting-park at Moritzburg, near Dresden, there may still be seen the initials of a certain seventeenth-century prince done in evergreen trees, clipped in such a way that their height increases from the base to the top of the letters, which are seen, therefore, as though laid on an inclined plane. But these letters are only some thirty feet in length and are hidden away in a corner of the park. When this device was made, formal planting, the clipping of trees and puerile gardening tricks of many sorts were in universal use; and, placed as it was, it had at least the merit of being unobtrusive. It has remained for the nineteenth century, which prides itself upon a truer love for the genuine beauties of nature, to disfigure a whole mountain-side and a lovely landscape with a gigantic inscription which can be read for miles.

The Pine Barrens in May.

IT is the last of May, and very late in the Pines. The broad-leaved Laurel (*Kalmia latifolia*) is only just beginning to unfold its many-flowered corymbs of rose-colored and white blossoms, making the waste places gay and brilliant. And its small relative, the Sheep Laurel, is opening its deep crimson-colored flowers. In some places it has taken possession of the ground to the almost entire exclusion of other plants.

The Stagger Bush (*Andromeda Marianna*) is in full bloom. Although not as showy as the Laurel, yet its large clusters of pure white, waxy-looking bells make it very attractive. Another shrub of this genus, *A. ligustrina*, is also in flower, as well as its near congener, *Leucolhoë racemosa*, with long one-sided racemes of white flowers.

The Sand Myrtle (*Leiophyllum buxifolium*), a little evergreen shrub, with umbel-like clusters of flowers, is charming. The small petals are pure white, but the ten exerted purple-pink stamens give it considerable color, while the dark, shining leaves make an effective background for the flowers. In the more moist places *Itea Virginica* is abundant, and covered with racemes of small white flowers. But the crowning beauty among these wild shrubs is the Fringe-tree (*Chionanthus Virginica*), which here and there are so white with their graceful, drooping panicles of flowers that at a little distance they look like snow-banks.

The heavy odor of the Swamp Magnolia proclaims its presence on every side, and those who like the fragrance are fortunate, as the flowers are very beautiful amid the deep setting of the shining leaves. The Swamp Maple,

growing alongside, is also pretty and effective with its long, swaying pedicels and winged scarlet fruit.

The Holly (*Ilex opaca*) is shedding its winter leaves, and sending out new ones, which have not yet taken on the glossy green that characterizes them later in the season. The bright red berries are still scattered over some of the trees, while the new shoots are full of clustered flowers, giving promise of abundant berries for next Christmas time. Its relative, the Ink-berry (*I. glabra*), is also in bloom, while retaining its thick evergreen leaves and black berries. And another shrub of this genus, the Black Alder (*I. verticillata*), is likewise holding its bunches of scarlet berries while being crowned with new leaves and flowers.

In the distance I see great clumps of Mistletoe, and on a near approach I find this, too, covered with flowers amid its white berries. The flowers are greenish yellow, nearly the color of the thick, persistent leaves. The Sweet Gum trees, on which it has made its home, have a forlorn, prematurely old look, as if they did not enjoy the burden imposed upon them. The Shad-bush (*Amelanchier Canadensis*, var. *oblongifolia*), together with most of the Blueberries, are nearly out of bloom, and forming fruit for a plenteous harvest.

Many of the herbaceous plants are now in the first flush of beauty. Among the most notable is *Xerophyllum asphodeloides*, which sends up from a thick tuft of evergreen, grass-like leaves, from one to eight or ten flower stems, surmounted at the top with a compact raceme of beautiful white flowers. The Pitcher-plant is also unfolding its singular deep purple flowers, and its strange, pitcher-shaped leaves have withstood the frost of winter, and are still fresh and bright.

The Pine Barrens also nourish some lovely Orchids. The delicate *Arethusa bulbosa* is now in bloom, and the low Moccasin flower (*Cypripedium acaule*), and these will be succeeded by other species until frost comes in the fall.

And here, too, I find the pretty little Star-flower (*Trientalis Americana*), with its pure white stars standing above the whorl of pretty leaves. It is called a northern plant, whose habitat is cold damp woods, but here it is fresh and vigorous, with stems bearing three and sometimes four flowers. The slender Blue Flag (*Iris Virginica*), with leaves no wider than some of the grasses and sedges that surround it, is just beginning to open its fine, delicately formed flowers. And the little heath-like *Hudsonia tomentosa* is thick in the more sandy places—scarcely allowing room to step—and is covered all over with bright yellow flowers, that are too pretty to crush with the foot. And here is the Cucumber-root (*Medeola Virginica*), the stem clothed with white wool, and bearing two whorls of leaves, and just beneath the upper one small recurved purple flowers.

Most of the plants herein mentioned can be easily cultivated. I have a nook in my garden devoted to them, where they are growing finely. One side of the bed is bordered with *Xerophyllum*, which blooms freely. One plant has eight flower stems, others four and five, making a beautiful display. The Pitcher-plant also does well in an artificial swamp—five flowers on one plant. This, and other bog plants, are more beautiful here than in the wild swamps, as they never suffer from drought as they often do in the shallow bogs—the home of their birth. *Mary Treat.*

May 30th.

Suggestions for the Improvement of Cemeteries.

WE shall be able, perhaps, to realize more quickly and clearly the direction in which to seek for improvement in cemeteries by following a more practical and out-of-doors method of investigation than by consulting an art-library. Let us, then, consider the simplest possible example and see what suggestions it may offer for our guidance in more complex and more extensive cases.

Some of us, perhaps, may remember to have seen a cluster of many family graves in an uncultivated nook

or dell of an old farm, where some of the less commercially valuable, but equally beautiful, original timber trees have been allowed to grow undisturbed, till their very size makes the few brown-stone grave-slabs seem modest and nestling to the ground, and where, the cattle having been kept out, the wood violet and other shy wild plants add their delicate charms, while they also mark the peaceful seclusion of the spot. Such simple and yet dignified rural furnishings are in harmony with the purpose to which the place is dedicated and to the feelings of the sympathetic visitor to it, and leave the imagination free to conjure up, if it will, romantic visions of the past. In such a spot the thought might easily occur to one that here was indeed a restful place in which to have laid away the mortal remains of a few of those weary human beings whose life struggle it was to subdue nature to their own aims, and who yet finally succumbed to her and whose remains became a part of her.

How much more appropriate to their lives are such graves, with such surroundings, than they would have been in some great cemetery, where their modest little grave-stones would have been put to shame by scores of big, staringly white Egyptian obelisks, broken topped Greek columns, Roman urns, weeping Italian angels, Renaissance canopies, Gothic spires, and all the other kinds of showy monuments, and where all restfulness and seclusion are annihilated by rows upon rows and scattering swarms of factory-made, white marble grave-stones, all set up on edge so as to be as conspicuous as possible and looking as if they would be heaved out of plumb by every frost. Such stones have, in fact, the very unmonumental quality of being in a state of unstable equilibrium. And as if all these white monuments and grave-stones were not enough to frighten Nature into submission, innumerable fences are added, mostly of the sort which may be described as the "this-is-the-most-show-you-can-get-for-your-money" cast iron fence. And, as iron rusts into a color which is somewhat harmonious with nature, such a catastrophe is carefully avoided by painting all iron work a gloomy black, or vivid white, or by gilding it, like a cresting over a chromo tea store. The managers of cemeteries seem to be proud of these private fights with Nature, and do all they can to aid and abet them with their ribbon gardening and by planting all the most artificial looking specimens of "nature's bright productions" that skillful nurserymen can induce to grow. They have no limiting rules as to showiness, but are only too glad to sell lots to those who will spend most in making a show that will advertise the cemetery.

The few who feel dissatisfied with this state of things should organize new associations for forming and maintaining truly rural cemeteries. They should have other and higher ideals in their minds, and should limit themselves and their successors by strict rules adapted to secure the desired result—so far as rules can do so. If they allow monuments at all, they should use the same care and discrimination that a "hanging committee" do in limiting and arranging the works of art that necessity compels them to place so cruelly close together in a gallery. But they ought to go further than this; they should encourage, if not require, burials to be made with no monuments at all at the graves beyond the merest end of a dark colored stone that will serve to permanently mark the spot and to carve a family name upon. All other necessary information in regard to persons buried in the cemetery can be given on slabs in a memorial wall at the entrance, or by written records. They can provide halls, galleries, or loggias in which to place bas-reliefs and other sculptures of suitable character and size, and thus avoid all monuments scattered promiscuously through the grounds. As for planting, it should be done according to a comprehensive scheme, and the choice of plants had, probably, best be limited to such as are native in the region; not that this is essential, but in order not

to leave too much to the discretion of zealous, but indiscreet persons, who are constantly making their selections for planting upon the supposition that what is good under some circumstances must be good always. They should establish a rule limiting fences to those that are necessary, and requiring these to be in conformity with some general scheme devised with due regard to harmony with and strict subordination to nature. There should be a like subordination to nature in all other necessary artificial constructions, such as retaining walls, bridges, roads, walks, gutters, steps, guide posts, vault fronts, and so on. They should avoid formality and artificiality in all things and at all times, for they should remember that they have set out to make a rural cemetery and not an architectural one.

J. C. Olmsted.

Brookline, Mass.

The Cultivation of Huckleberries.

Gaylussacia and *Vaccinium*, genera belonging to the Huckleberry tribe of the *Ericaceæ* or Heath Family, comprise a hundred or more species found in various regions, but chiefly in America, where they are known as Huckleberries, Blueberries and Cranberries. Owing to their great abundance, few attempts have been made to improve any of them except the Cranberry. The time will come, however, when every small-fruit garden will have its improved varieties of Blueberry or Huckleberry, as well as its Strawberries and Raspberries. No good collection of these plants, so far as I know, exists in any of the European gardens, and, apart from the collection started at the Arnold Arboretum, I know of none in America. Indeed, so difficult has the cultivation of these plants been considered, that any record of success in the attempt has usually been doubted.

The growing of Huckleberries and Blueberries from seed requires close attention, and can hardly be carried on successfully without a green-house or frame. The best soil to use for them is sand and loam in equal parts, care being taken that the sand is free from clay or iron.

Shallow earthen pans are better for the seed than boxes, as there is less danger from fungus, but after the first transplanting boxes may be used.

As soon as the fruit is received it should be macerated in water for several days, so as to separate it from the pulp, and then washed clean. If early in the season, seeds of the early varieties may be sown at once, and will come up in a few weeks, but as the plants will make little growth, they will need careful handling to keep them over the first winter. It is better to wash out the seed and mix with fine moist sand, and keep in a cool pit or frame until the days begin to lengthen, say about the middle of January. Then prepare the seed pans or pots and insure free drainage by using sphagnum or coarse siftings of peat. Firm the soil well and give a gentle watering with a fine hose. When the soil has settled, scatter the seeds thickly and evenly over the surface and give the lightest possible covering. Then add a layer of fine sphagnum, syringe lightly, and set the pans in a temperature of 60° to 65°. After sowing, if the seed is not allowed to become dry, it will usually come up in from five to six weeks, although I have known it to lie in the ground a year and then germinate. The pans should be examined now and then, and as soon as the seed shows signs of germination the coarsest of the moss should be removed. When the plants have made the first rough leaf they should be pricked off thickly in shallow boxes and fresh soil prepared and drained as for the seed. They should be syringed every day and kept growing in a high temperature and moist atmosphere. As soon as they have covered the ground they should be again transplanted. After the third pricking out, if everything has been carefully attended to, they will be growing strongly and will need more air and less moisture, to harden them off gradually. The frequent transplanting in fresh soil each time keeps the plants from damping off and encourages good root-growth. About the 1st of September they can be removed to a cold-frame or pit in some sheltered situation, where they should have plenty of air every pleasant day, but should be covered at night to keep them from frost as long as possible, so that they may become ripened before going into their winter quarters. As winter sets in they should be covered with moss and shutters, and will only need airing once or twice a month for a few hours to guard against fungus, which will start even in a cold-frame if kept long without air. About the first of May they can be planted in prepared beds of peaty soil or a light sandy soil of good depth. If dry weather sets in they will require a good

syrring toward evening, as the plants are not deeply rooted yet, and delicate rootlets are soon destroyed if allowed to dry. After the middle of August the syrring may be discontinued, so that the plants may ripen well. When freezing weather comes the beds should be mulched with Pine needles, Oak leaves, or other similar material, to keep the plants from heaving. After the second year they are transplanted to the nursery and need only ordinary care. When finally removed they will be found to transplant with the greatest of ease, and no perceptible loss.

The Huckleberries and Blueberries can also be propagated from cuttings of the underground stems or stolons which are found on many varieties. These can be taken up in the autumn, cut in lengths of two or three inches, planted in boxes of sandy peat or loam, and kept in a cool pit or house away from severe frost until about the 1st of February. They then require a gentle heat and moisture until they start. When they have made a good growth they should be hardened off and treated as other hard wood plants, but, like other members of the Heath Family, they cannot endure saturation while growing under artificial treatment.

These plants can also be grown by layers, by bending down the branches and tonguing, as with other hard wood plants. A good moist mulch of moss around the young layers will accelerate the rooting. I have not as yet propagated them from cuttings or grafting, but I see no reason why this should not be done with cuttings of the young wood, just as other Ericaceous plants are propagated.

I should advise those not having green-house facilities to select healthy young plants from an open pasture if possible, not more than a foot high. Much larger ones can be transplanted, but greater care is needed for success. Take them up early in September and plant them firmly and thickly in a well prepared bed, which should have a good share of sand and peat with the loam. Protect well with a heavy mulch, and during the first summer keep them well watered when the weather is dry. If the ground is kept well stirred and clean, by the second spring they will have an abundance of fine roots, when they can be transplanted where they are to remain with the greatest ease and safety. I have handled thousands of them in this way with perfect success. My reason for transplanting early in September is that new roots are then formed before winter sets in, and if well mulched, as stated above, they are ready for a strong start in the spring. While they will do well in any good soil not overcharged with manure, I find they give more satisfaction if a few inches of peat or leaf mold is spaded in with the soil. On poor light lands a top dressing of well decomposed cow-manure would be beneficial. Strong, rank manure should be avoided, as most plants of this family resent its use.

The following are a few of the best known North American species: The Black Huckleberry (*Gaylussacia resinosa*) is a shrub from two to three feet high, with dull, reddish yellow flowers and sweet, crisp, globular berries of a shiny black color. The fruit is firmer than that of other species, which makes it of more value as a market berry. But it is much more difficult to start and is not so easily transplanted as the Blueberry. Of several marked varieties, one has very sweet, pear-shaped berries, with blue-black bloom; the common name of "Sugar Plums" has been given to them. Another variety has glaucous leaves, and berries covered with a glaucous bloom. A third has large bluish berries, with rich flavor, and a fourth has white berries, which are much more delicate to the taste and bring in market more than double the price of the common varieties. Large areas of Huckleberries now grow wild, and yet the crop is diminishing each year, and it would be prudent to prepare for future supplies. Superior varieties could be originated, and they might be made as profitable, no doubt, as other small fruits. Naturally, the Huckleberry is found in open woods and dry rocky hills from Canada to Georgia.

The Dangleberry or Tangleberry (*G. frondosa*) is easily distinguished from the common Huckleberry by its large pale green leaves, which are glaucous beneath, and its loose drooping racemes of flowers often from two to three inches long. When neither in bloom or in leaf, it can be distinguished by the reddish yellow wood of the new growth, and the ashy gray bark, often peeling from the old wood. The fruit is large and has a blue bloom. It ripens much later than the former species and is more acid in flavor. It is not common in eastern Massachusetts, except along the seashore. I have never found it more than three or four miles from the coast. It is a much stronger growing shrub than *G. resinosa* and of a more open, branching habit, often being found more than four feet high. Farther south it comes to greater perfection and is considered superior in flavor to other varieties. It is native from

Massachusetts to Florida. It grows much more readily in cultivation than *G. resinosa* and might be improved like the other species by selection or hybridization.

The Bush Huckleberry (*G. dumosa*) is a small shrub not more than two feet high and not as common in eastern Massachusetts as the other species. I have usually found it in sphagnum bogs with *Andromedas* and *Cassandras*. The leaves are narrow and shining above. The flowers are in short racemes and bracted. The berries are of a good size and shiny black, not abundant and rather insipid, but not unpleasant to the taste. Plants transplanted into a deep moist soil at the Arboretum only two years planted are doing fairly well.

The Deerberry, or Squaw Huckleberry (*Vaccinium staminium*), is a neat bush two or three feet in height, with slender green branches which afterward turn brown. The foliage is often two inches long and one wide. The racemes of flowers are conspicuous on account of the long yellow anthers projecting beyond the spreading corolla, which is pure white. Few of our hardy Ericaceous plants are more beautiful in bloom, and it is well worth a place in every garden if only for cut flowers, which appear like fairy bells. The berries are greenish white or dull red and can hardly be called edible. The fruit from North Carolina is much larger than that grown in Massachusetts. Its range is from Massachusetts to Florida.

The High Bush Blueberry (*V. corymbosum*) forms handsome clumps of shrubbery from four to ten feet high in deep swamps and moist woods, but seldom reaches more than four feet in open pastures. The young branches are usually yellowish green, turning to a light gray when old or much exposed, while the bark on old stems becomes rough and peels off in shreds. The leaves are narrow, mostly egg-shaped, often purple at the time of flowering, but afterwards becoming much broader and coarse veined. The flowers are large, white, bell-shaped, and borne on the extremity of the branches of the previous year's growth. They appear in May and early June, and the fruit is ripe from August to late in September. The latter is variable in shape, size, flavor and color. Of many well marked varieties, one has large black fruit of a pleasant acid which seems exactly the flavor to add to a bowl of new milk. Another, a large blue one, has a delicate sugary flavor. I chanced upon a bush in East Foxboro last summer which was twelve feet high, loaded with berries of a beautiful blue, rich, juicy, and half an inch in diameter, while some were even larger. In this swamp ten or twelve good forms of fruit might have been found, and by careful selection and hybridization there is no reason why the High Bush Blueberry should not become an excellent and abundant fruit, as it is more easily cultivated than any of the others. An acquaintance in Cambridge planted a few, some years ago, and now he has all the fruit he needs during the season, while during the rest of the year nothing can exceed the beauty of the shrubs. A dwarf form of *V. corymbosum* which rarely grows more than eighteen inches high has large fine abundant fruit of a bluish black color.

The Low Blueberry (*V. vacillans*) is a shrub from one to three feet high with a yellowish green stem and glaucous leaves, usually growing on high rocky ground and at the edge of woods. It bears an abundance of large sweet berries which are chiefly covered with a blue bloom, though I have found black varieties. The fruit and flowers are formed at the extremities of the last year's growth, which is from one to four inches long without leaves, so that a large part of the plant seems leafless. The ends of the branches are covered with fruit, however, which can be stripped off by the handful. As it is very prolific, the flowers of this species in May look much richer and more abundant than in any of the others. The fruit is ripe from late July to September. This plant is well worth cultivation as an ornamental shrub, and for its valuable fruit. I saw a white variety of it some years ago in Plymouth, Massachusetts.

The Low Blueberry (*V. pennsylvanicum*) is a low growing shrub seldom exceeding a foot in height with narrow shining leaves and white flowers in early spring. This is found in immense beds in Pine woods and rocky, shady places, often covering great areas of rock when there is not more than an inch of soil, with a carpet of rich soft green which in May and June is covered with white and pale pink blossoms and in July loaded with its delicately flavored fruit. This is the first Blueberry to ripen in New England, and the early crop brings such prices that the children earn many a dollar by picking it, besides the fun of going a-berrying. These berries are somewhat easily bruised, but if carefully handled can be carried a long distance. There are several recognized varieties of this species. One is black fruited, flat at the end and much finer than the species. This might be made profitable as well as

ornamental, as it will grow under the drip and shade of trees, and on the poorest soils.

The Canadian Blueberry (*V. Canadensis*) is a dwarf shrub with light green wood seldom exceeding a foot in height, and resembling *V. Pennsylvanicum*, but with broader and more downy leaves. The fruit is blue-black and ripens later than the common Blueberry. It is not common in the State of Massachusetts, but through Vermont and parts of the British Provinces it is more plentiful and is sent in large quantities to Boston markets after the home supply is exhausted.

V. uliginosum is a low spreading shrub with glaucous foliage and blue berries which are edible but not abundant. It is a native of the high New Hampshire Mountains and northward. It is also found in northern Europe and northern Asia. It is growing well at the Arboretum.

V. cespitosum is a minute alpine variety not more than one or two inches high.

The Cowberry, or Mountain Cranberry (*V. Vitis-Idea*), is of neat habit, resembling miniature Box, but of a darker and more glossy green. The woody branches springing from underground shoots or stolons soon make a solid mass of rich green foliage not more than four or six inches high. The flowers are of a rosy pink, and the berry dark red and acid. They make, with sugar, a rich jelly or sauce for meats or desserts. The plant is found only in one or two localities in Massachusetts, but is more common on high mountains of New Hampshire, and in the Province of New Brunswick it covers immense tracts and in the markets of St. Johns I have seen the berries for sale by the barrel. It is also a native of the high mountains of northern Europe, where the fruit is used for jellies. It does fairly well in cultivation in a peaty moist soil.

The Common Cranberry (*V. macrocarpon*) is found in large beds on low grounds in almost every part of New England. It is a prostrate evergreen creeping along the earth or moss by fine roots. The flower stems are thrown up on slender branches, and are pale red, later becoming variegated. The fruit, usually bright red, is sometimes black. It varies much in size, shape and color, is round, pear-shaped or egg-shaped. Many varieties have been selected by the cultivators, some of which are nearly an inch in diameter. The growing of Cranberries has become in many parts of the country a great industry. Hundreds of acres of Cranberry bogs are now in preparation at an expense of from \$100 to \$300 an acre. Even at that price the bogs yield a good profit, often in the third year, as many as five hundred bushels being sometimes gathered from an acre of well prepared land.

The Small Cranberry (*V. Oxycoccus*) is a much smaller plant in leaf, fruit and flower. It is usually found in cold bogs. The fruit is used for the same purposes as the other Cranberries, but is seldom gathered when *V. macrocarpon* can be had. It does fairly well in cultivation, but except for botanical purposes it has little interest.

The Erect Cranberry (*V. erythrocarpon*) is a tall shrub, with reddish nodding flowers, and large black, very juicy insipid fruit. It comes from the mountains of North Carolina, and south. This shrub is scarcely hardy in the Arboretum. We have also *V. Myrtillos*, *V. Arctostaphylos* and *V. ligustrifolia*.

Other varieties that we have not yet tried may prove of interest, such as *Gaylussacia brachycera*, a very rare, dwarf, evergreen species from the mountains of Pennsylvania and Virginia; *Vaccinium hirsutum*, a small plant from the mountains of North Carolina, with neat foliage and dark colored fruit, and several others.

Arnold Arboretum.

Jackson Dawson.

New or Little Known Plants.

Amelanchier alnifolia.*

DOUBTLESS hundreds have seen and admired the bloom of our eastern Shadbush among the bursting foliage of the spring woods to one who has seen and tasted its fruit. For some unexplained reason the flowers of this species, at least in certain sections of the country, are rarely fertile, and in my boyhood the Juneberry, as the fruit of the Shadbush was called, was like a myth to me until a young tree well laden with ripe berries was brought home by a neighbor as a curiosity. The peculiar flavor of the fruit as then experienced lingers yet in memory. With the western representative of the genus, *A. alnifolia*, the case is different. It fruits abundantly, and in the region from the Rocky Mountains westward, where the supply of berries and fruits is limited to a few Raspberries, Buffalo-berries, Haws, scarcely edible Currants and the Wild Cherry (of all which the last is really the only one deserving mention), the abundance and excellence of this fruit goes far in its season to make up the deficiency.

In a note which I find in the Gray Herbarium, written many years ago by the missionary, Rev. Mr. Spalding, it is stated that hundreds of bushels of these berries were dried every year for food by the Indians of the Clear Water region in Idaho.

This shrub, which is here figured, grows to a height of 6 or 8 feet, with an erect somewhat tree-like habit and dark green foliage. The leaves are rather thick and vary much in form, but are generally rounded or broadly elliptical, mostly very obtuse, or truncate, or even retuse, and coarsely toothed usually only near the summit. The flowers are usually large and showy, in short racemes, and the dark purple fruit is 3 or 4 lines in diameter, with few seeds. It is found in the mountains throughout the West, at wide extremes of altitude, from British America to California, Utah and Colorado, and from the Pacific to the Rocky Mountains, Minnesota, and Lake Winnipeg. S. W.

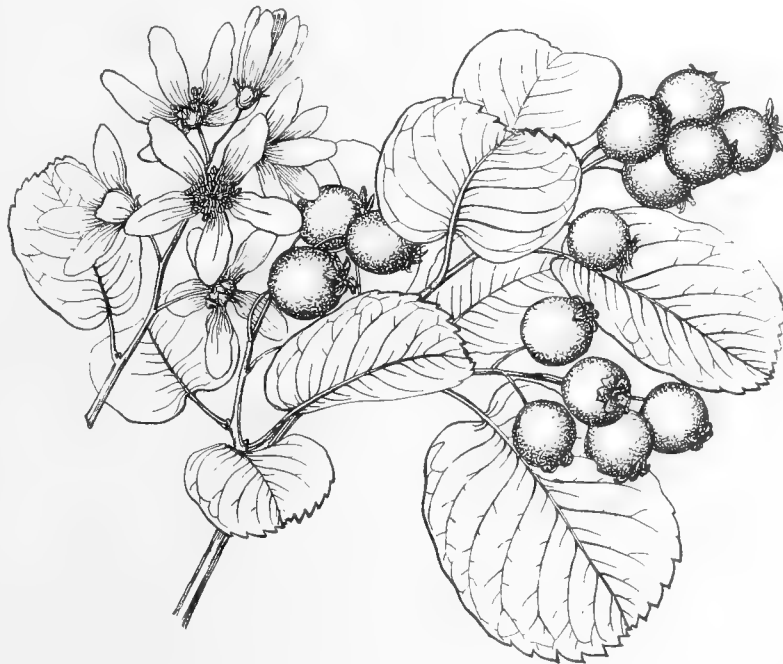


Fig. 34.—*Amelanchier alnifolia*

Plant Notes.

Selaginella Pringlei, Baker.

THIS new rosulate *Selaginella* (Nos. 271 and 886 of *Pl. Mex.*, wrongly referred to *S. cuspidata*, Spring.) is abundant with *S. leptophylla* in gravelly soil of dry calcareous bluffs and ledges of the barer mountain ranges of Chihuahua. It is as much a "resurrection plant" as is its associate, which, indigenous along our south-western border, has been often described and is well known. As the atmosphere and soil become dry, these plants take the form of a ball by the curling inward over their centre of their frond-like stems. Then the cañon sides present an unsightly and desolate appearance as though strewn with dead rubbish; but an evening shower suffices to transform them into lovely banks, thickly spread with the green mats of these plants, circular in outline and of exquisite design. The new species is very distinct from its well-known congener, being of a lighter green, and having softer

* *A. ALNIFOLIA*, Nutt. in Journ. Philad. Acad., vii. 22. Glabrous or often more or less pubescent; leaves broadly elliptical or rounded, obtuse at both ends or rarely acute, often somewhat cordate, coarsely toothed usually only toward the summit; racemes short and rather dense; petals an inch long or less, narrowly oblong; fruit purple.

stems and spinulose leaves. For the embellishment of rock-work in regions where they would not be exposed to severe frost (though they might in colder countries be pulled up and laid away for the winter on a dry shelf), these radiate-stemmed Selaginellas may be made of great service.
C. G. Pringle.

No true Water Lily (*Nymphaea*) was known to the flora of Pacific North America until June of last year, when Mr. John B. Lieberg discovered in a pond in northern Idaho a very pretty and distinct species that Mr. Thomas Morong, in the May issue of the *Botanical Gazette*, describes under the name of *Castalia* (the name which some botanists are anxious to see adopted in place of *Nymphaea*) *Liebergi*. It is a diminutive plant with white odorless flowers about an inch and a half in diameter when fully expanded. Mr. Morong points out the resemblance of the Idaho plant to *Nymphaea pygmaea*, a native of Siberia, China and Japan. The extension of this genus into western America is a fact of no little interest from the point of view of geographical botany.

A Sonora Hillside.

THE illustration on page 187 will give our readers a pretty accurate idea of the general appearance of much of the desert country in southern Arizona and the adjacent parts of north-western Mexico. It represents one of the low, granite foot-hills of the Sonora Mountains near the head of the Gulf of California. This is one of the most barren and inhospitable regions of the North American Continent. For fifty miles inland from the Gulf, sandy plains, which near the coast are shifting sand-dunes, alternate with numerous chains of low mountains trending with the coast—vast piles of volcanic rock, sprinkled over with a little fine soil. These desert mountains are absolutely treeless except in occasional cañons, where a little soil, washed down from the slopes above, has enabled the Mesquit and the Ironwood (*Olneya*) to obtain a foothold, and to drag out a miserable existence. The base of these forbidding mountains, and the lower hills and broad, gently swelling *mesas* which support them, are covered with more soil than the higher slopes, and produce a striking and extremely interesting Cactus vegetation. Mr. Pringle, almost at the peril of his life, and only with great suffering to his animals from scarcity of water and absence of forage, made a careful botanical survey of this region during the summer of 1884, and our illustration of a Sonora Hill is from one of a series of photographs which he was able to make during this journey. The tall, grotesquely branching cylindrical plant scattered over the hill is the *Suwarrow* of the Mexicans (*Cereus giganteus*), the tallest of the Cactus family, often exceeding a height of sixty feet, with a diameter near the ground of two feet. The handsome white flowers appear only at the very top of the tall shaft, and quite encircle the summit. The skeleton consists of a number of stout perpendicular ribs, only slightly attached together, and composed of hard, solid and durable wood, upon which time and exposure seem to make very little impression. They may be found scattered about on the desert, where the plants have died or been cut by Indians in order to secure the edible fruit. The fleshy covering soon disappears by decay, but the skeletons remain hard and sound. They afford the best material produced in this region for the rafters of huts or for small posts, and the Mexicans gather them in large quantities from the desert for these purposes. The stiff, rigid clumps among the *Suwarrow* on the hillside are plants of another large Cactus, widely branching at the ground from a single crown—*Cereus Thurberi*—one of the interesting discoveries of Dr. George Thurber, who, as botanist attached to the United States and Mexican Boundary Survey Expedition, first explored what is now the extreme southern portion of Arizona, and parts of Sonora. Although closely

allied to *C. giganteus*, *C. Thurberi* is a much smaller plant, the clustered stems rarely rising to a greater height than fifteen feet. The flowers, like those of *C. giganteus*, are greenish white, but the tube is narrower and more elongated, and they appear, not at the summit of the stem, but in a circle about one foot below it; and the fruit, like the ribs of the stem, are thickly beset with clusters of black spines. It was found also by Mr. Schott in Sonora, shortly after its discovery, but from that time (1851) was not seen again in a wild state by any botanist until Mr. Pringle visited this part of Mexico in 1884. *Cereus Thurberi* was at one time in cultivation from seed brought home by Dr. Thurber, and it may still be found, perhaps, in some of the European collections. There seems to be no record, however, of its flowering in cultivation. The large Cactus with tall, cylindrical stems in the lower left-hand corner of the picture is another *Cereus* (*C. Schottii*), a plant which, from a widely branching or stoloniferous base, throws up numerous stems, ten to fifteen feet high, and six inches in diameter. They are five to seven angled, armed in the sterile part of the plant with short, and on the fertile upper branches with long, pendulous spines, which form a reddish gray beard, in which the flesh-colored flowers and oval, purple fruit are hidden. There are scattered over the hillside, too, numerous dwarf specimens of a leguminous plant, *Parkinsonia microphylla*, which, under more favorable climatic conditions, sometimes attains the habit and the height of a small tree, and of *Bursera microphylla*, both plants able to put forth and maintain their minute leaves during a few weeks under the burning Mexican sun, which here so heats the rocks in summer that the human hand cannot bear contact with them. The large bush in the lower right hand corner is a small plant of the so-called Green-barked Acacia, the *Palo Verde* of the Mexicans, one of the most conspicuous plants of the desert, and, next to the Mesquit, the most familiar, perhaps, to travelers in the whole Boundary region from Texas to California. The *Palo Verde* sometimes becomes a tree of considerable size; and it is always a most striking and conspicuous object owing to the perfectly smooth, light, bright-green bark which covers its stem and branches. It remains throughout the long, dry and heated season perfectly leafless, but with the midsummer rains puts out tiny leaves, and soon becomes brilliant with a profusion of handsome, bright yellow, pea-like flowers.
C. S. S.

Cultural Department.

Annuals for a Succession of Flowers.

GARDENS should now be bright and gay; every empty spot should have been filled and planting should have been finished. But there will soon come a time when many gaps will occur, and it concerns us now to prepare material with which to fill them. Many annuals are of brief duration. Among these are Nemophila, Collinsias, Virginian Stocks, Clarkia, Lupins, Poppies, Hawkweed and Ten-week Stocks. After a few months many annuals—for instance, Drummond Phlox, Gaillardias, Zinnias, Mignonette, and many more—lose their trim shapes, and it is best to clear them away and recover the ground with fresh plants. When Hollyhocks, Larkspurs, Foxgloves, Canterbury Bells and Sweet Williams have done blooming and are rooted out or cut away, something is needed to occupy the space they filled.

To keep the garden filled, sow at once a fresh set of annuals, and keep them ready to fill up empty spaces as they occur. African Marigolds (the Eldorado strain) are capital for filling into places recently occupied by other plants, and they will keep in bloom till frost destroys them. The cucumber-leaved Sunflower (*Helianthus cucumerifolius*) and *Cosmos bipinnatus* may also be used in the same way. The latter, however, should be grown and starved in pots till its flower buds are set before it is planted out. Raise some fresh dwarf French Marigolds and Petunias to plant in dry ground, as these thrive in such places where many other annuals would perish. Snapdragons in bloom now if cut back would bloom again in the fall, but not in such perfection as young plants raised now from seed. China Asters from seed sown now will bloom in September

and October. Zinnias raised now give fine flowers from August onward. *Coreopsis coronata* and *C. Drummondii* are bright and beautiful yellow-flowered Composites, and should be used liberally for late flowers. About the end of July mildew usually injures spring-sown Drummond Phlox, and good young stock should be provided to replace the old. Put in now a sowing of annual Candytuft and another a month hence. Seeds of *Gaillardia picta*, and its variety *Lorenziana*, sown now will take the place of early spring stock. Corn Flower raised now will bloom freely before the summer is over, so will Balsams, annual Chrysanthemums and Mignonette. The dwarf Nasturtiums are very good in their way, but Lobb's varieties continue in good blooming condition longer than any of the annual sorts. Potato beetles are apt to attack *Nicotiana affinis*, and destroy its beauty before the summer is over. It is well to raise a lot of young plants now, for it is one of the most generous and fragrant of night-blooming plants. In fact, any annual that will bloom within three months from sowing, may be raised from seed sown by mid-June for service in the fall.

dling growth. And if they cannot be set out permanently as soon as they are large enough for transplanting they should be pricked off into other temporary beds, to keep them stocky and cause them to root well and to be in better condition for planting.

W. F.

The Plum and the Curculio.—The plum is generally considered one of the most delicious of the stone fruits, and many persons prefer it to any other product of our orchards. It certainly would be found oftener in home fruit-gardens but for the fact that the curculio has been so destructive. Occasionally, fine fruit is raised in small quantities, with no other precaution than keeping poultry in the yard with the trees. It has long been known, too, that the curculio could be conquered by suddenly jarring the trees every morning, when the insect, inactive and unable to fly, drops into a sheet and is destroyed. This, however, is a tedious process, and a simpler remedy has long been desired. This seems to have been found in the application of arsenical poisons in a spray, by means of a force-pump with a nozzle which throws the poisoned water over the



A Sonora Hillside.—See page 186.

At this time of year it may be well to sow these annuals in a small plot of ground specially reserved for them, in soil which should be moderately moist and very mellow. From this seed bed the seedlings may be transplanted as required. Should warm, dry weather set in, seeds are likely to lie dormant in the ground till after the next soaking rain, but in the case of these succession-crop annuals we cannot afford this inactivity, and they should be kept watered, and, if need be, slightly shaded until after they germinate. In preparing the ground for fine seeds to be sown in summer, in the event of warm, dry weather, it is well to give the ground a thorough soaking with water the day before it is dug, mellowed and sown, rather than to prepare the ground while it is dry, and sow the seeds and water afterwards.

Seeds sown in rows are easier cared for than those sown broadcast, and give a better chance for using a small hoe between them. Seedlings should not be allowed to grow up thickly in the rows, but should be thinned to prevent spin-

tree in a fine mist. The process was described in the first number of this journal, and it only needs to be added that it is not yet too late to save the fruit, as the insect is just beginning to work on the young plums. Of the forms of arsenic used, London Purple seems preferable to Paris Green, being cheaper and less liable to injure the foliage of the tree. It is also in a finer powder, and therefore more easily kept in suspension in the water. Three-fourths of a pound to eighty or one hundred gallons of water is considered a good proportion. The greatest caution should be used with poisons of this kind. The hands of the operator should be protected, and neither horses nor men should be allowed to breathe the vapor. Grazing animals should be kept out of the orchard for some time. If a heavy rainfall, soon after the application, should wash off the poison, a second application may be made. All who have tried this method unite in saying that no danger can come from eating the ripe fruit, as the small amount of poison lodged upon it is dissipated before it matures.

In a paper read before the Illinois State Horticultural Society last winter, Mr. D. B. Wier held that the curculio prefers to deposit its eggs in the fruit of the native plums. He therefore advocates the planting of native varieties among the trees of foreign origin. His claim is that the insects will not only pass by the latter trees for the former, but that a large percentage of the eggs deposited in the native fruit will fail to develop, so that the increase of the pest will be held in check. Another old remedy is dusting the trees with air-slaked lime. It is reported in the bulletin of the Ohio Experiment Station for May, that orchards treated in this way in Michigan have yielded abundant fruit. The lime is applied by means of a flat paddle from a barrel in a wagon which is driven along the rows of trees on the side towards the wind. The lime can also be mixed with water and applied in a spray. This last method has been practiced near Boston with remarkable success. S. A.

Orchid Notes.—*Cattleya Skinnerii alba*, a lovely variety, bearing snow-white flowers with just a few purple stripes in the throat, is a native of Costa Rica, and to be well-grown needs more heat than is usually accorded the type. It delights in abundance of water, both overhead and at the root, during the growing season, and requires a long season of rest, in a cool, dry house. One plant now in bloom here is bearing 25 flowers on two spikes, and they will last a month in perfection, forming the chief attraction of the Cattleya House. *Cattleya Wageneri* is a very rare and chaste var. of *C. Mossiae*, bearing pure white flowers, with a dash of lemon at the base of the large open lip. A superb form is now in bloom with us, the flowers being fully 9 inches across and of good substance. This plant is doing unusually well in a basket filled entirely with sphagnum moss, a capital potting material for most Orchids when care is taken that it does not become saturated with water. A thorough soaking about once a week is often sufficient. *Miltonia (Odontoglossum) vexillaria* will soon be at its best, and may now be seen in abundant varieties. Among the choice of these may be noted var. *rubella*, with flowers of deep rose; var. *leucoglossa*, pale rose, with a large pure white lip; var. *Hilliana*, with large rose-colored flowers, dotted and striped with dark purple; var. *superba*, a deep colored form, the base of the lip being white, with radiating crimson lines. This Orchid is probably the most beautiful of the Miltonias or of the Odontoglossums, to which genus it was formerly referred. Unfortunately it is seldom seen in good condition in this country. In many instances the cause of this is too little water, as may easily be seen by their starved and thrips-eaten condition.

Thrips has always been the pest of this species and will be sure to appear whenever the watering is neglected. The plants should be watered at least once a day and always from overhead. During the hot summer days or when the firing is heavy in winter it may be necessary to syringe the foliage a few times. Under this treatment thrip never attack the plants here. In respect to heat we try to keep a temperature of 60°–65° the whole year round. We use peat and moss in equal parts for potting, particular attention being paid to drainage. Under the above treatment these Orchids grow like weeds, producing 3 to 4 spikes of flowers from a bulb and increasing the number of leads and size of bulbs every year.

Kenwood, N. Y.

F. Goldring.

Staking Plants.—Hollyhocks, Dahlias, perennial Larkspurs, Bottonias, Sunflowers and many other tall-growing, top-heavy plants, will need staking. Never wait till the plants grow large and are blown over or broken down, but stake them before they need support. Once the stakes are set, it is an easy matter to tie up the plants occasionally, and in this way to preserve their good form. Use neat stakes, but strong ones, and firmly set. A large Dahlia, heavy with rain, will require a strong support in a high wind. Chestnut, locust and red cedar stakes worked at the saw-mill in suitable lengths, and from one to two inches square, and with the sharp corners planed off, can be used for tall, heavy plants like Dahlias and Sunflowers and for young trees. Good stakes can also be made from the refuse yellow pine which can be procured at many saw-mills. Such heavy and stiff stakes are not best for tall Lilies like *L. auratum*, *L. superbum* and others, which grow from five to nine feet high, but long, strong, elastic stakes are preferable. These sway a little in the wind with the plant, and at the same time are perfectly secure, and for this purpose there is nothing better than Red or White Cedar saplings such as are used for bean-poles, slender and neatly dressed. Almost any stake does for smaller plants, although the cane stakes so much used by florists are not of much value in the flower garden; they rot off in the ground too quickly. But whatever

is used should be neat, and firmly set, and, if the plants are in rows, accurately in line. The plants should grow higher than the stakes, and they should be so tied as to hide them, and at the same time not to appear as if crushed or in an unnatural position. W. F.

The Rock-Garden in Spring.

TULIPS are still conspicuous among the plants flowering this week in the New England rock-garden. The most beautiful of them is the Lady Tulip of gardens, *Tulipa Clusiana* (also known as *T. praecox* and *T. rubro-alba*), a common plant from Portugal to Persia, and one of the most clearly marked and least variable of all the Tulips. It has linear, acuminate, channeled, glaucous leaves, a slender flexuous stem, twelve or eighteen inches high, and a delicate white flower two inches long, the narrow segments marked on the inside with a handsome purple spot, the three outer flushed externally, except along the edges, with bright red. The anthers and filaments are dark purple or nearly black. The flowers of *Tulipa acuminata*, or, as it is often known in gardens, *T. cornuta*, are always striking and interesting. They are sometimes scarlet and sometimes yellow, and these colors are sometimes blended. The segments are very long, and all are narrowed gradually into a long, narrow, horn-like point. This is a very old inhabitant of gardens, and a very distinct type, but its native country is not known. It is very hardy here, and one of the most easily cultivated of all the Tulips. *Tulipa reflexa* is also in bloom. This is another Tulip which is only known in gardens, and which, as Mr. Baker has suggested, is probably a hybrid between *T. acuminata* and *T. Gesneriana*. It has handsome bright yellow flowers, two and a half to three inches long, the segments narrowed gradually to an acute point and sharply reflexed above the middle when the flower is fully expanded. Among our native Violets worthy of a place in the garden is *Viola pubescens*, the common yellow Violet of northern woods, with broadly heart-shaped, downy leaves, and rather small bright yellow flowers, which continue to appear during several weeks. It takes kindly to cultivation, thriving in the shade, and is springing up everywhere in the rockery from self-sown seed. The Pepper-root (*Dentaria diphylla*), another inhabitant of northern woods, probably is not seen very often in gardens, where, however, it can well fill some shady nook or pocket in the rockery. It has large compound leaves, with three rhombic-ovate, coarsely cut leaflets and short racemes of rather large white flowers. The long, fleshy, toothed root-stock peculiar to the plants of this genus of the Mustard Family (*Cruciferae*) have a pleasant pungent flavor, to which they owe their common English name. Another pretty shade-loving native plant now in flower is *Waldsteinia fragoides*, a low perennial herb, with leaves divided into three cut-toothed lobes, and small bright yellow flowers, in size and shape not unlike those of the Strawberry, but produced upon many-flowered scapes rising above the foliage.

Gardeners hardly realize or appreciate the beauty of our North American Lady Slippers (*Cypripedium*), and yet among them are plants as showy and far more delicate and beautiful than any of the tropical species in which the horticultural world is just now so deeply interested. All the species of the Eastern States are perfectly hardy and can be grown as easily as any of the more delicate of our wild plants. They will thrive, with the exception of *C. acaule*, which requires drier soil and a more sunny exposure, along the margins of Rhododendron beds in peaty loam, or in the shady and least dry parts of the rock-garden. They are easily transplanted and make excellent pot-plants, if needed for the decoration of conservatories or living-rooms. The only one of these interesting plants blooming here now is the larger of the two yellow flowered species, *C. pubescens*. It has stems two feet high, pubescent like the broadly-oval, acute leaves, and handsome flowers, with a pale yellow gibbous lip, and long, linear, twisted petals. It is the common bog species north and west, and is found also on the Alleghany Mountains.

Varieties of *Iris pumila*, with bright-blue and with yellow flowers, are now in bloom. It is a dwarf European species, three or four inches high, with large solitary flowers, well suited to the rock-garden, and an excellent subject for a dwarf edging to the herbaceous border. The dwarf Iris is very hardy, and spreads rapidly, soon making broad, dense mats. Not less beautiful is the crested dwarf Iris of the southern Alleghany Mountains (*Iris cristata*), a low plant, with leaves only three or four inches long, and very handsome, light blue flowers, with a long, slender tube much longer than the short-clawed divisions of the perianth, of which those of the outer series are

beautifully crested. This is a hardy plant, spreading rapidly by creeping root-stocks, and admirably suited for the border of wood-walks and other rough parts of a garden, where it can more than hold its own against weeds and grasses.

Arnebia echinoides is one of the most showy of the hardy perennials now in flower. It is a native of Armenia and a member of the Borage Family, nearly allied to *Lithospermum*. The stems, which grow from six to twelve inches high, are terminated by large, one-sided, solitary spikes of handsome, primrose-colored flowers, marked at first with purple spots in the sinuses between the lobes of the corolla, but which entirely disappear at the end of a few days. The sessile, alternate leaves are ciliated on the margins like the stems. *Arnebia echinoides* may be increased from cuttings made from the stems and from the roots, and it is easily raised from seed.

Aubretia deltoides is one of the prettiest of hardy, spring-blooming rock-plants. It is an evergreen trailer, with terminal few-flowered racemes and small rhomboidal leaves, which just now is covered with sheets of handsome, pale purple, four-petaled flowers, half an inch across. It requires deep soil and rather an open exposure, where it can spread through the crevices between the rocks and send its trailing stems over their surface. It can be easily increased by cuttings and from seed, which, if sown as soon as ripe, will make strong flowering plants by autumn.

Scilla Hispanica, or, as it is generally known in gardens, *Scilla campanulata*, is the latest of the genus here in flower, blooming with the Poet's Narcissus, the two being excellent plants to associate together in beds or wild wood-borders. The flowers are deep blue, bell-shaped, half an inch deep, racemose, and spreading nearly at right angles from the slender six to twelve flowered scape, which is eight to twelve inches high, and springs from a rosette of linear strap-shaped leaves. There are varieties with white and with flesh-colored flowers. It thrives in dry and in comparatively wet soil; and it is one of the best of the hardy bulbs which can be naturalized here in grass along the borders of woods and wood-walks.

Ornithogalum nutans, the Satin Flower of some old New England gardens, is such an old-fashioned flower that few people nowadays know it. And yet it is a beautiful and a very hardy plant, which has been growing in this garden for over forty years; and during all these years its modest flowers have given fresh and ever increasing delight. It is a bulbous plant of the Lily family, a native of southern and central Europe, with four or six strap-shaped, flaccid leaves, and a loose raceme of five or six large, nodding, bell-shaped flowers. They are an inch long, with broad, petaloid filaments; the segments of the perianth are white, broadly flushed with pale green on the outside, smooth and shining like satin, and less spreading than in other species of this genus. The Satin Flower flourishes in all soils, in the full exposure to the sun and under the dense shade of overhanging trees and bushes.

Among Pæonies the earliest in bloom is one of the single-flowered forms of *P. tenuifolia*, with rather broader leaf segments than are found in the typical plant. The single-flowered variety of this handsome south Russian plant is much less often seen in gardens than that with double flowers, although it is certainly far handsomer and more attractive; and this is true of all Pæonies, whether herbaceous or shrubby, that the single are handsomer than the double flowers, although double-flowered varieties are almost invariably grown in American gardens. *P. tenuifolia* produces solitary, dark crimson, cup-shaped flowers, surrounded by the crowded, reduced upper leaves, terminal upon stems twelve to eighteen inches high; the leaves, of which there are ten or twelve upon each plant, are cut into narrow, one-nerved, confluent segments, which vary in width from one-twelfth to one-fourth of an inch in different varieties. *P. tenuifolia* is a perfectly hardy plant of the very easiest cultivation.

Boston, May 25th.

C.

Notes from the Arnold Arboretum.

THE number of plants in flower in the Arboretum this week is not large. Among the Barberries, one of the earliest in bloom is the form of *Berberis vulgaris* from northern China and Manchuria—the var. *Amurensis*, or *Berberis Amurensis* of some authors. Of the many forms of the common Barberry now cultivated this is one of the most distinct, interesting and valuable from a garden point of view. The leaves are much larger than those of the common Barberry and the stems are stouter and more rigid, although the Chinese plant will not attain probably its height and dimensions. Indeed, Maximowicz, in his "*Flora Amurensis*," describes it

as a low shrub, rarely more than three feet high, a stature which the Arboretum plants have already surpassed. The flowers are somewhat larger than those of the common Barberry, possessing their delicious fragrance, and appear here fully two weeks earlier. This is one of the most desirable of the perfectly hardy deciduous shrubs of comparatively recent introduction. It is a free-growing plant which can be readily increased by cuttings or division, or from seed, which has not been produced yet on the plants in this collection.

Every lover of nature in America, and nearly every gardener, knows the Great Laurel, or, as the people who inhabit the southern Alleghany Mountains, where it grows with a perfection and beauty unknown elsewhere, call it, the "Ivy," but the little northern Swamp Laurel, *Kalmia glauca*, is less known. It is, nevertheless, when in flower one of the handsomest of the small shrubs of North America, where it is found from the Pennsylvania Mountains far northward, always in cold peat-bogs. *Kalmia glauca* rarely exceeds a foot in height; it has a loose straggling habit, narrow sessile, oblong, revolute leaves, white glaucous on the lower side, and terminal, few-flowered, smooth corymbs of large and very showy lilac-purple flowers. It is not an easy plant to establish in cultivation, although when once established and left to grow without any effort being made to improve its habit by pruning (which seems fatal to it) it will flower freely year after year. Great care is needed in taking up young plants for cultivation, which should be thoroughly rooted in pots or boxes before they are planted in the garden. *Kalmia glauca* is now well established in the Arboretum, where it has flowered for several years.

Much more easily cultivated is the beautiful Rhodora, which botanists now refer to the genus *Rhododendron*, as *R. Rhodora*. The Rhodora which is one of the best known and best loved wild flowers of New England, can be easily transferred to the garden from the cold northern swamps, which at this season of the year are tinged with its handsome rosy flowers. It is a low deciduous shrub, two or three feet high, with oblong leaves, downy on the lower side, and appearing later than the umbel-like terminal clusters of flowers. It requires a deep peaty soil, in which it will soon spread, and make large clumps.

Fothergilla alnifolia is too rarely seen in gardens. It is a low and very hardy shrub belonging to the Witch-hazel family, with showy terminal, catkin-like spikes of small flowers, with numerous long, projecting white stamens. They are the only conspicuous part of the flower. It has no petals and a small bell-shaped calyx. The oval or obovate leaves, smooth, or pubescent on the lower side, appear later than the flowers. The Fothergilla, although not found growing naturally anywhere north of Virginia, is perfectly hardy here.

Clematis (Atragene) verticillaris, a rare plant confined to the mountainous or far northern part of the country from northern and western New England and Virginia to Wisconsin, is the earliest of the genus in flower here. It is a woody climber with stems six or eight feet long, trifoliate leaves, and large, handsome blue or purple spreading flowers, two or three inches across, which in the mountains appear sometimes with the melting snows. This plant requires ordinary garden soil, and no special cultivation.

The earliest of the brambles in flower is also an American plant—*Rubus triflorus*, the dwarf wild Raspberry of northern swamps and woods, with annual herbaceous stems six to twelve inches high, handsome ovate-lanceolate, doubly-serrate leaves, pointed at both ends, and one to three flowered clusters of white flowers followed by small inedible fruit. It is an exceedingly pretty little species, which, when established, makes a neat compact mass of foliage, well worth a place on the borders of the shrubbery.

Ribes multiflorum is a Hungarian species rarely seen in gardens. It is a handsome shrub at this season of the year, with numerous upright and spreading branches three or four feet high, long-petioled, three or four lobed leaves, which are dark green and glabrous above, lighter green and very pubescent on the lower side; and long, dense, pendulous racemes of green flowers. The fruit is red and about the size of a pea. The plant, although more interesting than showy, might well be cultivated more frequently. A beautiful figure of it (*t. 31*) will be found in Lavallée's "*Icones*."

Ribes Uva-crispa is a smooth-fruited plant which botanists consider one of the wild forms of the common Gooseberry. It is a low shrub with rigid branches two or three feet high, densely armed with stiff yellow prickles, small, orbicular, palmately divided leaves, hairy on both sides, and with green flowers, hanging singly or in pairs from little tufts of green leaves. The berry is small and yellowish. It is found in hedges and open woods of central and southern Europe and

western Asia, and has been cultivated for centuries for its fruit. A plant of the America Red Currant (*Ribes rubrum*) is a beautiful object in flower. It is not considered distinct from the garden Currant of Europe, although the veins of the leaves are white beneath, which led Michaux to apply to the American plant the name *albinervum*, and the yellow-green flowers are larger and more conspicuous than those of the European Currant. The stems are straggling or reclined and three to five feet long. The wild Red Currant is an inhabitant of cold bogs and woods from northern New Hampshire and far northward. *Ribes floridum*, the wild Black Currant of our northern woods, is in bloom also, and resembles the Black Currant of gardens. It is a shrub three to five feet high, with heart-shaped, lobed, resinously dotted leaves, drooping racemes of large and handsome greenish or white flowers, and black berries with the smell and flavor of those of the garden plant. These two wild American Currants probably will not be often found in those gardens where plants of merely botanical interest are not cultivated.

The Corchorus (*Kerria Japonica*), with its bright yellow and very double flowers, is almost invariably found in old country gardens in the Northern States, but this plant in its natural state with single flowers, each with five petals and numerous stamens, is still rare. It is, however, a far handsomer and more desirable plant. The *Kerria* is a shrub five or six feet high, with slender, virgate, flexuous stems, and ovate-lanceolate, longly acuminate, doubly serrate, deciduous leaves, rounded or subcordate at the base, and solitary flowers terminal on short lateral branches (in the single form wide spreading, an inch and a half across) and appearing with the leaves. The fruit has probably never been produced in this country, and according to Von Siebold it rarely ripens in Japan, where the plant is everywhere cultivated, and now widely distributed in a semi-wild state. It is found in the mountainous regions of central China, and like the Ginkgo and several other plants, for many years known to Europeans from Japan only, it is probably a native of that country. In central China the fruit is reported to be "yellow and good to eat like a Raspberry," the Chinese name indicating that it produces an edible berry. The single and the double flowered forms are beautifully figured in Siebold and Zuccarini's "*Flora Japonica*," t. 98.

Daphne Genkwa is another Chinese plant long cultivated in Japan, and first made known by Von Siebold, who found it in Japanese gardens and described and figured it in the "*Flora Japonica*," t. 75. The *Genkwa* is a handsome and interesting shrub with spreading tortuous branches covered at this season of the year with sessile lateral fascicles of two to seven handsome, tubular, lilac-blue, precocious flowers about an inch long, the tube, like the ovary, densely coated on the outside with silky hairs and quite smooth within. The leaves, which appear sometimes later than the flowers, are opposite, membranaceous, short petioled, about an inch long and quite entire. The *Genkwa* is very generally cultivated in Japan, both on account of the beauty of its flowers as an ornamental plant, and for the flowers and bark, which are believed to possess valuable medicinal properties and are frequently used and highly esteemed by the Japanese. *Daphne Genkwa* is not very hardy here, and like nearly all the other species of the genus in the collection, requires in winter a slight protection of evergreen branches.

Daphne Cneorum, a trailing evergreen shrub of central and southern Europe, with tough, wiry stems, smooth, lanceolate, glabrous leaves, and terminal clusters of bright pink, deliciously fragrant flowers, is now in bloom. It is a free blooming plant, but not very hardy nor satisfactory in this climate. Sometimes it grows well for a number of years, forming wide, handsome mats, and then, in a winter apparently not more severe than those which have preceded, it dies, or is seriously injured. In some exposures and situations it appears to do best when unprotected in winter, in others a covering of evergreen branches appears beneficial. It is well worth all the care and attention necessary to secure its free growth and abundant flowers.

Two *Spiræas* in addition to the two mentioned in the last issue of these notes are now in bloom, *Spiræa media* and *S. hypericifolia*. The former is a tall, erect shrub with round branches, flowering after the leaves have attained their full size. They are elliptical, acute and obtuse, entire or sometimes deeply serrate at the end, three or four ribbed, smooth above, hairy on the lower side and on the margins. The handsome, many flowered corymbs terminal on lateral, leafy branches of the year are produced in great profusion, for a distance of two or more feet along the ends of the main branches. *Spiræa media*, which is often confounded in gardens with *S. chemadryfolia*, which has square branches and smaller and more generally serrate leaves, is one of the best of the

early flowering *Spiræas* here, of its section. It is very hardy, grows rapidly in all soils and it can be transplanted with the greatest ease. It is found in Hungary and southern Russia, and through Siberia to Kamschatka and Mongolia. *Spiræa hypericifolia*, known sometimes in gardens as Italian May, or St. Peter's Wreath, is a tall shrub with long, slender, flexuous, round branches, small, wedge-oblong leaves, entire or slightly crenate or lobed at the end, and small white or cream-colored flowers in nearly sessile lateral umbels, terminal on very short leafy branches. A variable species, of which several forms are distinguished, it is found from western Europe through Siberia to Mongolia.

May 25th.

J.

The Forest.

Forest Trees for California.

IN the second number of GARDEN AND FOREST I mentioned the "English" Oak (*Q. Robur pedunculata*) as a promising timber tree for California. The facts thus far gathered concerning this rather unexpected adaptation are these: The acorns of this Oak (from a tree in New England) were first planted on the experimental grounds of the University in 1879, with a number of species of eastern Oaks, which were increased in succeeding years. All of these, however, were found to be of exceedingly slow growth, showing little or no inclination to utilize the long growing season of California. After two years' growth none of the American Oaks had attained a greater height than eighteen inches, the average being from eight to ten only. Of the European Oak seedlings, none measured less than twenty inches, and a number were three feet in height, with strong branches. Attention having thus been called to the possible importance of this tree for California, several importations of acorns were made subsequently, and these, with seedlings a year old, were distributed for trial to numerous localities in the State.

Unfortunately, but few of these seem to have found favorable conditions for their prosperity, from causes sufficiently apparent from the experience had upon the University grounds themselves. It was found, first, that the acorns were extremely attractive to all sorts of depredators, including blue jays, rats, gophers (*Thomomys umbrinus*) and ground squirrels (*Spermophilus fossor*), and that, therefore, but a small percentage of the acorns sent out ever germinated. Those that did germinate, however, were reported to be growing thriftily and rapidly. How long they continued to do so, will have depended largely upon the protection afforded them from cattle, which seem to be as fond of the foliage as the other animals mentioned are of the acorns; moreover, the ground squirrel and gopher delight in gnawing the roots and trunks as well. But few of the trees escaped mutilation from one or the other cause, and even the one which is the best representative of the stock grown by the University experiment station, now beginning its seventh year, lost fully one season's growth, being weakened by removal and having been bitten off by a horse. It thus shows properly the result of five years' growth only. It is now sixteen feet high, with a trunk six inches in diameter a foot from the ground, and separating at three feet into three branches, forms a spreading top, fourteen feet across. The tree has now set an abundant crop of acorns, and a seat is made around it, the occupants of which will be fully shaded during the warm hours of the day.

A Black Oak (*Q. tinctoria*) of the same age and grown without any interruption, is a bush scarcely six feet high and having as yet no aspirations to become a tree. Its growth is about the best among the eastern Oaks.

Two species of Hickory (*Carya porcina* and *C. tomentosa*), also contemporaries, have as yet hardly risen above four feet, and, like many eastern trees, show their aversion to the climate by sending up suckers from the base as soon as the shoots of the previous year have made a growth of a few feet.

This enormous difference in favor of the European Oak seems partly, at least, due to its peculiar root habit. A seedling a year old, appearing above ground with a stem the size of a goose quill at the base and six to eight inches high, will show a straight tap root three to four feet long and one-third of an inch thick near the crown. It thus quickly reaches a depth in the soil where moisture is found during the whole of the rainless summers of California; and hence, doubtless, its vigorous growth during the entire long growing-season, the leaves remaining active from after March to the end of October. The latest leaves, however, belong almost entirely to the second growth, which pushes out very vigorously toward the end of June, and frequently reaches a length of four feet before the end of the season.

But all this is very much changed when the tap root has been seriously shortened, or destroyed in transplanting. The European Oak then assumes the habit of root, as well as of stem, exhibited here by the eastern Oaks, and its growth becomes equally slow. Some two-years-old seedlings, transplanted from the nursery to the brow of a dry hill above the University, show this to perfection. The tap roots having, of necessity, been badly mutilated, fibrous roots branch out from the stump, but have thus far, in two years, been unable to reach the moist depths of the very rich soil. They have not only no second growth, but no tendency even to form a definite trunk; the branches tend to spread out low, and between them, crops of suckers rise from the base of the stem at the time when the standard trees begin their second branch growth. These weakly shoots form the next year's branches, while the larger ones frequently die back. This curious habit, resulting in the formation of low, scraggly bushes, instead of stately trees, is just what is shown here by the Oaks of the Mississippi Valley when left to themselves; and the unlooked for resistance of the European Oak to the severe drought of the California summer, as well as its surprisingly rapid development, thus seems to find a simple explanation in the peculiar habit of its root to push down into the moist soil the very first season. It would be interesting to know whether in its native country, or in the region of summer rains in the United States, it exhibits a similar tendency.

Thus, while this Oak promises excellent results as a timber tree, not only for California, but, doubtless, *à fortiori*, for Oregon, its propagation evidently requires considerable care. The acorns must either be planted where the trees are to stand, or transplanting must be done while the seedlings are quite young, and with great care not to mutilate the tap root. Both acorns and seedlings must be fully protected against animal depredations, especially against the rodent family, and later, as saplings, against ranging cattle and horses.

But if, as may reasonably be hoped, these precautions will insure to the Pacific coast a supply of hard-wood timber that will do away with the heavy cost now involved in the importation of this necessary material, the labor will be amply repaid. It may be objected that with such rapid growth, the timber may not possess the same qualities as in its native climate. But when it is considered that the more rapid growth is accomplished in a proportionately longer space of growing time, this apprehension loses much of its force; and it is not at all probable that the English Oak, with a habit so widely different from that of the native Oaks of California, should produce a wood of a quality so inferior as theirs.

University of California, May, 1888.

E. W. Hilgard.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Is there not some way of inducing the guardians of the Central Park to remove the hundreds—indeed thousands—of dying Norway Spruces which so seriously deface its beauty? There is scarcely a point of view in the whole park from which

some of these trees may not be seen in a very advanced stage of hopeless decay and ugliness. Just at this season, when everything else is clothing itself with fresh green, their mournful, miserable forms are especially distressing; but there is no season when they are not eyesores in themselves and witnesses to want of attention or want of judgment on the part of the Park authorities. Of course the cutting of trees which are sickly beyond hope of recuperation sometimes involves the necessity of replanting, but with regard to most of these Spruces this would not be the case. Let any one follow the East Drive, for example, and note those which are the most obtrusive in their decay. He will find, if he has any eye for the grouping of trees and the effect of landscape arrangements, that in a great majority of cases their presence would be undesirable even if their condition were better. Nature seems by chance to have recognized this fact, for in one or two places in the park where the presence of Spruces is really desirable, they have flourished well. On the West Drive, for example, near the well-known group of Weeping Beeches, stand several Norways in fine condition, and admirably placed as regards the general effect of the scene.

I know, of course, that difficulties attend the cutting of trees in public places. Fetish-worship, as directed to trees, seems not yet to have become extinct in the minds of the ignorant; and whenever an axe is laid to a trunk in the Park there is almost sure to be a letter in some daily paper from some cranky loungee calling attention to the reckless injury to public property which is being worked. By such persons a park seems to be regarded simply as an expanse of ground in which to grow trees—not an expanse in which they should be grown in the right places and grown well. But the Norway Spruces of the Central Park are now so far advanced in decay that even the self-appointed apostle of ignorance in tree-preservation could hardly raise his voice in their favor. And whether he should protest or not, intelligent public opinion would certainly sustain the Park authorities should they enter upon a campaign of almost wholesale cutting. It would be a relief to intelligent eyes to be rid of these distressing objects, and an even greater relief to note the increased chance for development which their removal would afford to their healthy neighbors, and the increased beauty of the wayside groups or little dells which they are now crowding and deforming.

New York, May 1st.

Philodendron.

To the Editor of GARDEN AND FOREST:

Sir.—In regard to the hardiness of the Spanish Chestnut, of which you ask the experience of your readers, I would say that it is somewhat tender here, but hardly more so than the English Walnut. Both are tender when young, losing the extreme ends of their branches in winter. As they get stronger year by year, this loss does not occur, and, in time, they become large, fruitful trees. Of both the Spanish Chestnut and the English Walnut there are many very large trees about Philadelphia, bearing fruit freely every season.

Germantown.

Joseph Meehan.

Recent Publications.

The Botanical Works of the late George Engelmann. Collected for Henry Shaw, Esq., and edited by William Trelease and Asa Gray. Pp. 548. Cambridge, 1887.

Mr. Henry Shaw, of St. Louis, the founder of the Botanical Garden of that city, which bears his name, has certainly reared a more appropriate memorial to his old friend and fellow-townsmen, in causing this volume to be made, than any statue of bronze or of marble could have been.

Dr. Engelmann's botanical writings cover a period of about fifty years; they relate chiefly to the plants of North America, generally to the most difficult families and genera, for which Dr. Engelmann had a special predilection; and often to plants of the highest horticultural importance and interest, such as the Oaks, Pines, Firs, Grapes, Agaves, Cactuses and Yuccas. In these and in other families he was long the leading authority, and his writings must always be referred to. They were widely scattered through government reports, the proceedings of learned societies, and the columns of periodicals, and quite inaccessible to the general student, who will now welcome this handsome and substantial addition to botanical literature. The different papers are grouped by subjects under fourteen chapters.

No. 1. Contains Engelmann's inaugural thesis *De Antholysi Prodrumus*, a remarkable morphological paper which attracted the attention and won the approval of Goethe.

No. 2. Contains the sketch of the Botany of Dr. A. Wislizenus's expedition into northern Mexico.

No. 3. The various papers on the Dodders (*Cuscutineæ*), a family which Engelmann studied for many years, and finally elaborated in a classical memoir.

No. 4. Contains all the papers, fourteen in number, on the *Cactaceæ*. These embrace, perhaps, Engelmann's most important botanical work. Many of these were first published by the United States Government, and were beautifully and elaborately illustrated. These and the other illustrations, joined to Engelmann's previous publications, all appear in this reprint and add greatly to its value.

No. 5. Contains the papers on *Juncus*.

No. 6. Contains all the papers on *Yucca*, *Agave* and similar plants, which, like the Cactuses, botanists are generally willing to pass by, because they are so difficult to manage in herbaria, but which Engelmann loved and studied through years of patient and painstaking research.

No. 7. Contains all the papers on Conifers, which no one knew so well or studied so faithfully.

No. 8. Contains the papers on Oaks, and the best information which yet exists in regard to the botanical characters and relationship of the North American species of these most difficult plants.

Nos. 9, 10 and 11. Contain all that Engelmann wrote about the American Grape Vines, on the *Euphorbiaceæ* and on *Isoëtis*. In No. 12 are collected the shorter miscellaneous papers; in No. 13 are various lists and collected descriptions of plants, and in No. 14 are several general notes upon features of vegetation in different parts of the United States.

The editors of this volume have wisely abstained from making any changes in the text as the author left it or from adding explanatory notes, when recent investigations might naturally have led him to change his views. Their task, however, has not been a light one, as many of the papers were published under conditions unfavorable for proof-reading, and others were never revised by the author. An excellent portrait of Dr. Engelmann, from a photograph taken during the last ten years of his life, increases the value and adds to the interest of this memorial.

Professor Trelease is prepared to furnish a few copies of this book in sheets, which will be delivered to the Express Companies at St. Louis, at cost price, twelve dollars.

Notes.

The California Florist is the title of a new illustrated monthly published at Santa Barbara and San Francisco and devoted to the interests of floriculture on the Pacific Coast. Judging from the first number the new enterprise seems to be in capable and energetic hands, and deserves success.

At an auction sale of a lot of imported Orchids recently held in Boston, a healthy plant of *Cypripedium Fairrieanum* with two new breaks brought \$240. At the same sale a plant of the well known hybrid, *Cattleya Exoniensis*, raised many years ago by crossing *C. Mossiæ* and *Lælia purpurata*, was sold for \$105. Other plants brought prices proportionally high.

In a paper from the Botanical Institute of the University of Pavia, Dr. Fridiano Cavara describes a number of new fungi which infest grape-vines in Italy, and, in referring to American species, he expresses the opinion that the *Greeneria fuliginæa* of Messrs. Scribner and Viala, which was considered by them the type of a new genus, is in reality a form of *Coniathyrium Diplodiella*, and he states that the same form was previously known in Italy.

Small flat Peaches, grown in Florida, have been on sale in our markets for several days, under the name of "Japanese Peaches." It is the fruit of the "Flat Peach of China," which Decaisne believed to be a species (*Prunus platycarpa*), but which later botanists now consider merely one of the many forms of the common Peach cultivated by the Chinese. The Flat Peach is a large and vigorous tree, with long, slender branches, nearly evergreen foliage, pale pink flowers and small fruit, two and a half to three inches wide, so flattened on the upper and lower sides that it is rarely more than one inch deep, with a deep five-angled eye at the top. The stone is round, two-thirds of an inch in diameter, flattened like the fruit, and slightly wrinkled. The flesh, which adheres slightly to the stone, is juicy and of excellent flavor, although the skin is thick and rather tough. The flower-buds of this tree are generally killed at the north, but it is evident from the earliness and excellence of the fruit in this market, that its more general cultivation in the south may be made profitable.

The auction sales of plants in this city show no decline in activity as the spring season closes. They are held every

Tuesday and Friday, and on more than one occasion as many as 50,000 plants have been disposed of. The stock in the main is small though well-grown, and was formerly bought by the trade, but lately, and especially this year, many private buyers resort to the warerooms of Young & Eliot for bedding plants and the like. The prices this year have hardly exceeded two-thirds of the wholesale trade prices—but growers do not complain, because when plants are sold in large lots at a cent each, buyers take an increased supply. The sales are not confined, however, to cheap stock. Fine specimen plants are often sent here. At one auction not long ago, where many well-grown Palms were sold, a good specimen of *Phoenix rupicola* brought \$94, and experts pronounced it worth \$150. The total amount received at that particular sale was between \$4,000 and \$5,000.

Retail Flower Markets.

NEW YORK, June 8th.

Cut flowers are inferior in quality, as a rule, and there is less variety in the shops. Mignonette remains of good size. Peonies are large, and well grown, and sell for from 16 to 20 cts. each. La France Roses are very fair and cost \$2.50 a dozen. Catherine Mermets and Brides are not large but are otherwise excellent; they bring \$2 a dozen. Niphetos and Perles des Jardins cost \$1.50 a dozen. General Jacqueminots are unsatisfactory, although stems are longer than a week since. American Beauties and Paul Neyrons are the finest. All selected Hybrids sell for \$5 a dozen, or 50 cts. each. Puritans cost 40 cts. Moss Rosebuds are unusually pretty and mossy, bringing \$4 a dozen. Yellow Daisies are 40 cts., and white Marguerites, which are really field Daisies, bring from 15 to 25 cts. a dozen. The blue Cornflowers are highly esteemed and always in demand; they cost 15 cts. a bunch of from 15 to 25. Water Lilies from New Jersey ponds are in market at 25 cts. a bunch of 3. Carnations are much improved in quality and command 50 cts. a dozen. Snowballs are in brisk demand. Cattleyas bring from 50 cts. to \$1 a flower. Many bedding-plants are seen in florists' stores. These are well cultivated and make a brilliant blaze in windows, doorways and on plant-stands. Business has been brisk among florists generally this week with orders for out-of-town entertainments and for city weddings.

PHILADELPHIA, June 8th.

The quality of flowers, especially Roses, has fallen off decidedly this week. The notable exceptions are Meteor and Madame Cuisin, both of which can be relied upon to give good flowers during the hot summer months. A few Roses are being cut out-of-doors from sheltered positions in favored localities near the city. The Jacqueminots from under glass are by no means good. They sell at from \$1.50 to \$2 a dozen, the same as Mermets and La France, while The Bride, Perle and Sunset are from \$1 to \$1.50. Bennett and Gontier are steady at \$1.50. Niphetos, \$1. Bon Silene and Safrano, 75 cts. Hybrids, \$3. American Beauty averages better in quality than the Hybrid Remontants in general, and brings from \$3 to \$4 a dozen. Carnations, Heliotrope and Mignonette are 25 cts. per dozen. Lily-of-the-Valley, \$1. Pansies, 10 cts. Smilax from 40 to 50 cts. a string. *Asparagus tenuissimus* from 50 to 75 cts. a string. *Adiantum cuneatum*, 25 cts. per dozen fronds. Sweet Peas, 50 to 75 cts. a dozen. Cornflowers, blue, white, pink and purple, are 25 cts. a dozen, while the yellow Cornflower is 35 cts. a dozen. Field Daisies are 25 cts., and Dahlias, double and single, \$1 to \$1.50 a dozen. The Miniature Sunflower (*Helianthus cucumrifolius*) is offered in limited quantities at 50 cts. a dozen. This is a beautiful and useful annual.

BOSTON, June 8th.

There is an abundance of flowers here now; in fact, an overstock, particularly of Roses. Prices are low, and the street corners are well supplied with peddlers, who dispose of an enormous quantity of flowers at seasons when the supply is heavy. These dealers are not in favor with the store florists, who have often tried, but as yet without success, to have these street sales prohibited. Whether they injure the store trade or not, they certainly dispose of many flowers to people who would not otherwise buy, and they render a valuable service to the growers by using up their second quality and surplus stock. Those customers who want the best, properly packed, and delivered at their homes, must always go to the regular stores, and, everything considered, these probably get their flowers cheapest in the long run. The main stock of Roses coming in now consists of Teas and the commoner fancy Roses. With the exception of American Beauty and Jacqueminot, there are few large Roses. Jacqueminots are not as good as they have been. The hot weather brings small and thin blooms. Out-door Roses do not show color as yet. Long-stemmed Carnations are quite plenty, and so are Stocks, Heliotrope and Mignonette. Good Lily-of-the-Valley is very scarce, and brings winter prices. Other bulbous flowers are out of market entirely. A good many Ghent and "Mollis" Azaleas are brought in now, and are very useful and effective in large decorations. Prices by the dozen range as follows: Tea Roses, 50 cts.; Mermets, Perles, Sunsets, Niphetos and Brides, \$1 to \$2, according to quality; Jacqueminots, \$3, and American Beauties, \$4; Lilies-of-the-Valley, \$1; Heliotrope and Mignonette, 50 cts. Smilax, 50 cts. a string. Maidenhair Ferns, 50 cts. a dozen. The florists are all very busy, and appear to have a satisfactory spring trade.

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The Association of American Nurserymen.

THE nurserymen of the world have played such an important part in the general advancement of horticulture, that all planters and lovers of plants have something akin to a personal interest in their prosperity. That our parks and gardens have been enriched with such a variety of beautiful plants from all quarters of the globe is largely due not only to the business enterprise of nurserymen, but also to their intelligence and skill, and, we may add, to their enthusiastic, self-denying and too often unappreciated devotion to the cause of horticulture. We are sometimes inclined to criticise the glowing descriptions and highly colored pictures of novelties in the trade catalogues, but, on the other hand, these same catalogues must take rank among the most effective means of disseminating information of practical value concerning trees and shrubs and fruits and flowers. It is to the trial grounds of the great nurseries, more than to any other place, that planters have been obliged to turn for object lessons in cultivation and for instruction as to the hardiness, the beauty and the distinctive characteristics of trees and plants for the forest, the orchard and the garden. This means not only that nurserymen must be depended on for the material used in landscape gardening, forestry and fruit growing, but that a good share of our knowledge of these subjects has been derived from their studies and labors.

All persons, therefore, who take any interest in gardens or forests cannot but hope that the annual meeting of the Nurserymen's Association, to be held this week at Detroit, will prove successful in point of attendance and in the value of its deliberations. A large proportion of the subjects considered will be distinctively of a business character, but even these may benefit every tree-buyer. It was concerted action at a former meeting which effected the just reduction of freight rates for nursery stock, which is a direct advantage to every planter. Much remains to be done towards insuring such stock in transport against disastrous delays and exposure and towards holding railroad and express companies responsible for safe and speedy delivery, and this subject will, no doubt,

command the attention of the meeting. But perhaps the greatest benefit derived from these gatherings is found in the interchange of personal experience among the members. Very often papers of real and permanent value are read and published in the reports of the association. But the discussions which follow the reading of these papers are generally of more importance still, having a freshness of suggestion and a directness of aim which are never so manifest elsewhere as in the flashes which come from the contact of alert minds in friendly argument. Fortunately, there are no secrets in American nursery practice and no attempt at concealment interferes with the mutual improvement which comes from this reciprocity of ideas, and in this way the garnered experience of individuals in every part of the country becomes the common property of all.

Conventions of nurserymen and florists would be well worth attending for this single purpose, even if they were not made attractive by pleasant social features, by opportunities for enlarging acquaintance, by offering a timely period of recreation after the busy season has passed. No doubt they will prove more useful still in many directions as they become more thoroughly organized. They might render good service to horticulture by a systematic effort to secure uniform and correct nomenclature of trees and shrubs. It would be directly in the line of their labors to devise some plan for the better classification of cultural varieties of the different fruits and some comprehensive system for describing and identifying them. They might collect data from various stations in the country as to what fruit and ornamental trees are reliable in different sections and what ones are likely to fail. Indeed, there are fields without number towards which they can direct united effort, and so many skilled cultivators scattered over so wide a territory and working for a single purpose could hardly fail to accomplish results of lasting importance to horticulture or pomology.

Walks and Drives.

THE walks and drives play an important part in determining the effect produced by villa-grounds and country places. Whether composed of gravel, asphalt or simply of earth, they form wide lines, distinct from their surroundings in color and texture, drawn through lawns and shrubberies. As such they are conspicuous features; they are features, however, which have no real beauty in themselves, and, therefore, they should be used with care and discretion.

It is desirable to limit them as much as possible—to make them neither more numerous, nor wider, nor longer than necessary. Too often we see in small places a walk almost wide enough for a drive, and a drive almost wide enough for a park-way; a drive where a walk would have served every purpose, or walks which serve no purpose at all. It is no infrequent thing to find, instead of a fine stretch of lawn, an assemblage of winding paths, leading nowhere except back to the houses again, with small scraps of turf between them. Unity of effect is ruined by such an arrangement and no practical end is served. If for any reason the borders of the lawn are often visited, the turf itself may be walked on, for, unless exactly the same track is perpetually followed, a great deal of walking will not injure it. And if it is objected that the circling paths give access to the flower-beds with which they are bordered, the answer must be that the flower-beds are as much out of place upon a lawn as the paths themselves. Of course in a flower garden it is different. There the beds and the walks leading to them are the main concern, and whatever grass exists may rightly be subordinated to them. But if it is desired that turf shall preponderate in the effect, then the less it is cut up and disturbed the better. There is nothing more beautiful in itself, and nothing which gives so marked an expression of size, unity and restfulness to a place as a wide sweep of lawn. In the majority of cases it is better worth striving for than anything else;

and it should be jealously preserved from the presence of any accessories except those which may serve to enhance its proper character and increase its apparent size. It may be surrounded with trees and shrubs, and, if it is of considerable size, a few isolated specimens may be brought forward from such bordering plantations. But a lawn must be very large to admit of any other decoration.

In his suggestive article in our issue of June 6th, Mr. Olmsted pointed out the mistake which is so often made in demanding that the best rooms of the house shall be on the entrance front. One great reason why they should not be, is that they should have the best outlook, that either a drive or a walk must give access to the entrance front, and that no matter how simply treated it may be, it cannot fail to detract from the reposeful character of the outlook. Nevertheless we often find that even when the lawn front of a house is not the entrance front, a walk is carried past the lawn entrance or by the piazza or the windows facing the lawn. A greater mistake could not be made than this. The smallest stretch of gravel or naked earth brought thus into the immediate foreground disturbs the effect from the house of the green expanse—injures its restfulness and decreases its apparent size. And looking towards the house the injury is as great as when we look out from it. Nothing is more pleasing to the eye than the foundations of a house springing from the green turf, clothed with vines and broken with low-growing shrubs. Then that most charming of all effects is secured—the effect of intimate union between the soil and the building it bears—between Nature's work and man's work. But the smallest line of gravel will ruin this effect if it runs parallel with the walls of the house. And the lawn itself will look infinitely more beautiful if there is no walk running away from the house and cutting it in two. There can rarely be a need for such a walk when the lawn front and the entrance front are not the same. Even if a flight of steps leads down to the lawn from porch or piazza, no path is necessary unless there is a strong temptation for feet to follow one another in a given direction. If this is the case, however, a gravel walk is, of course, preferable to a trodden track, which gives an air of neglect to a place. But such a walk should be as short as possible, and it should not be bordered with flower-beds.

When a place is quite small it is best to make all drives and paths straight if possible. The drive, if there is one, should not approach the street front of the house, and should be carried to the entrance elsewhere in as direct a line as convenience will permit. Or if entrance front and street front are the same let there be no drive, let the gate be opposite the door, and let the path run in a direct line between them. Of course, if there are irregularities in the surface of the ground they should determine the course of paths; but such cases are comparatively rare, and in all others there are many reasons why the straight line should be preferred. Every foot of grass is doubly valuable in very small grounds, and a straight path absorbs fewer feet than a sinuous one; it is difficult to give a graceful form to a sinuous line unless it is of considerable length; when the house walls and the street line lie near together their straightness seems to prescribe that, in the interest of harmony, the connecting line between them shall be straight as well; and the straight line is more simple in effect, and simplicity is the greatest of virtues in the arrangement of small grounds.

We learn from the *Prairie Farmer* that the farmers of Iowa have suffered considerable loss from a disease of their nursery stock of Apples, Plums, Rose and other plants. The disease shows itself in the formation of excrescences on the roots which are popularly called "cancers." The origin of the trouble is obscure, some attributing it to insects and others to fungi. There is probably no good reason for thinking that the trouble is due to insects, and, as far as fungi are concerned, Professor T. J. Burrill, who has examined diseased roots from Iowa, states that,

although there is a considerable growth of the mould-like filaments of some fungus and swarms of bacteria on and in the exterior cells of the old bark, no one can say from this evidence that either of these causes the trouble, and he infers that, if the cause is a fungus, it comes rather from the soil than directly from a diseased plant to the healthy one.

The Cultivation of Truffles.

THERE are two things, truffles and terrapins, which no one dares to dislike, for, even if they are not exactly to our taste, they are always expensive, and we are, of course, willing to make martyrs of ourselves by pretending to like delicacies which only the favored few can afford to set before us. But there are a good many genuine admirers of truffles in America as well as in France, and they will be interested in two recent books on the cultivation of truffles—"*Manuel du Trufficulteur*," by A. de Bosredon, and "*La Truffe*," by Dr. C. de Ferry de la Bellone. Of the two, the last-named is the better from a scientific point of view. M. Bosredon, whose style has a touch of Daudet about it, begins with an account of an interview with an aged rustic, *Père Chenier*. The sententious *Père Chenier* wags his head gravely and enunciates the fundamental law of truffle culture: "*Semez des glands, vous récolterez des truffes.*"

The discovery of the law that, if one sows acorns, he will gather truffles, a discovery which has enriched many owners of barren land in some parts of France, was made by accident about eighty years ago. The growth of the truffle has always had an air of mystery about it. When one wants a crop of beans he sows beans. But the case of the truffle may be compared roughly to what would happen if one should get a crop of beans by planting bean-poles. The explanation of this anomaly is well stated in "*La Truffe*." Every one knows that truffles grow underground, and are hunted, if one may use the expression, by pigs and dogs whose scent is acute. At first, they were not even supposed to be plants at all, but later they were believed to arise from the punctures of roots by insects, still later, to be morbid conditions of the roots themselves, and now they are known to be fungi which are probably parasitic on roots of different trees, especially Oaks.

Unfortunately, *Père Chenier's* law applies only to regions where truffles occur naturally, and there, by sowing acorns of trees growing in truffle-bearing regions, there can be produced in a few years, seven to ten, crops of truffles which continue so long as the trees are in good condition. Fortunately for the French, the best soil is a thin, calcareous one not of much value for other crops. Dr. Ferry gives a chart showing the localities where truffles can be grown in France, and practically they are cultivated nowhere else. As all champagne comes from Champagne, so all truffles come from Perigord—at least, the labels say so. There is a considerable number of species of true truffles which belong to the *Tuberaceæ*, a sub-order of *Ascomycetes*, not to mention the false truffles which belong to the *Gasteromycetes* or puff-ball family, and a pretty full account of them is given in "*La Truffe*," together with some figures which, of course, are not to be compared with the superb plates in Tulasne's classic "*Fungi Hypogæi*."

Commercial truffles have not yet been found in the United States, although a few species of the truffle family have occasionally been found by botanists in the Eastern and Southern States. California seems to be much richer in *Tuberaceæ*, and Dr. H. W. Harkness has detected a considerable number of species in that State. Apart from their rarity, the American species, so far as known, cannot compete in flavor with the French, and it is hardly likely that truffle culture will soon be undertaken in the United States.

Dr. De Ferry's book is full of interesting details. We

have heard of fat pigs, learned pigs and precocious pigs, but it was left to his sympathetic pen to portray the well-bred, conscientious, pains-taking pig, the pig whose superior education alone makes him worth from sixty to seventy dollars. This comparison of the mental, and, if one dares to say so, the moral qualities of pigs and dogs, would delight any comparative psychologist. It is also interesting to read of the tricks of truffle poachers and the intricacies of the laws for their punishment. Nothing seems wanting, except, perhaps, some notice of the lives of the distinguished *gastromomes* whose talents were unselfishly devoted to the preparation and digestion of truffles. Even art is made to contribute to the value of the book, the frontispiece being a reproduction of M. Paul Vayson's Truffle Hunter, exhibited in the Salon of 1886.

W. G. Farlow.

The Domestication of Wild Fruits.

THERE are two reasons why we should attempt the improvement of our more promising wild fruits. First, there is a prospect that they may become valuable additions to our orchards or gardens; and second, the culture of these fruits offers a favorable opportunity to study the influence of changed conditions upon the characters and properties of these plants.

Regarding the first of these propositions we are not justified in assuming that all the fruits not now in cultivation are incapable of improvement. To argue that they must have been tried and found wanting in prehistoric times, because history gives no record of their cultivation, would be quite unwarrantable. Neither are we justified in assuming that because no attempt has been made to improve them, success is sure to follow systematic efforts. Our knowledge is hardly sufficient to prophesy what may be the outcome in submitting any given wild fruit to the experiment of systematic and prolonged cultivation.

To the scientific horticulturist the second proposition offers a more hopeful field of labor than the first. Whether the attempt to domesticate a wild fruit proves successful or not, from an economic point of view, it can hardly fail to add to our knowledge. The origin of our cultivated fruits, and especially the degree of their present excellence that may be ascribed to man's aid, is, to a considerable extent, involved in obscurity. The submitting of a hitherto untested wild fruit to cultivation, and the systematic study of the changes that result from such treatment, may throw light upon the historical development of our present cultivated fruits, and what is of still greater importance, it may furnish valuable hints for their further improvement.

The Juneberry (*Amelanchier Canadensis*), in some of its varieties, possesses qualities that commend it for experiments in domestication. It belongs to the Rose Family, and is thus botanically related to the best fruits of temperate climates. The plant is hardy, prolific, and exhibits remarkable variation. The fruit in its best natural state is of fair quality, attractive in appearance, sufficiently large to admit of convenient gathering, firm enough to bear carriage; and it keeps for a considerable time after being picked. In stature the species varies from a low shrub to a tree thirty to forty feet in height, and forms, grouped within the same botanical variety, sometimes exhibit nearly as much variation in height. The fruit is often very small, dry and seedy, and utterly worthless for any economic use; but in certain varieties it attains a diameter of fully half an inch, is sweet, fairly juicy, and delicately flavored.

Thus far, the finest fruit has been found on a form which is said to have come from the Rocky Mountains, and which is the only one I have attempted to cultivate. It appears to have been first brought to public notice by Dr. Hall, of Davenport, Iowa, who grew it and advertised the plant for sale about ten years ago. Mr. Benjamin G. Smith, of Cambridge, introduced it into Massachusetts, and received a silver medal from the Massachusetts Horticultural Society for it. Through the courtesy of Mr. Smith

a few plants of this variety were sent to the New York Agricultural Experiment Station in the year 1882.

These plants, which were well rooted layers, were set out in a moderately fertile clay loam, and have since received the same culture that is given to Raspberries. They have now grown into rather straggling shrubs about four feet high, though Mr. Smith states that on his grounds plants set some years earlier have attained the height of six feet. The shrub appears perfectly hardy in the climate of Geneva. It varies considerably in productiveness in different seasons, but during the past three years has borne at least a fair crop. The fruit, a miniature pome, varies in size from a fourth to a full half inch in diameter, and in its external appearance bears a striking resemblance to that of the Huckleberry, being deep purple in color, and having, like that fruit, a persistent and protruding calyx. The flesh is white, or slightly pinkish, and has a peculiar delicate, faintly aromatic flavor that is not in the least unpleasant, although lacking in intensity. With sugar and cream, the flavor is perceptibly heightened, and some persons who have tasted it in this way call it delicious. The seeds are small, soft, and though inclosed in carpels, are little noticeable in eating the fruit.

It should be said that this plant is not without its enemies. A fungus, *Rastelia penicillata*, attacks the foliage and fruit in some localities, though I have not seen it at Geneva. The curculio infests the fruit to some extent, and the English sparrow takes his share, but all these obstacles have not prevented good crops from our trial-grounds.

The most promising field for improvement in this fruit doubtless lies in the growing of seedlings, and in the crossing of varying forms. I have made sufficient experiments to demonstrate that the seedlings may be very readily grown; and I have a considerable number now on trial, though none of them have fruited as yet. I hope to secure plants of other varieties, and from distinct localities, in order to try the effects of cross-fertilization. One reason why I have been especially interested in this fruit is that it offers an opportunity to test a hypothesis. I have been struck by a coincidence that in almost all our fruits and vegetables, a pale flesh is accompanied by a mild flavor, while a dark-colored flesh is accompanied by a rich flavor,* and in fruits that contain much acid, the acid almost always increases with the depth of color in the flesh. The fruit of the only form of the *Amelanchier* with which I am well acquainted has a white, or very nearly white, flesh, and while the flavor is, as has been stated, quite delicate, it is too little marked to render the fruit generally popular. If by growing seedlings, or by cross-fertilization, we can secure varieties that have a darker-colored flesh, I should expect that they would have a more pronounced flavor, and might then rank among our delicious fruits. It is in this direction that I am chiefly working.

Geneva, N. Y.

E. S. Goff.

New or Little Known Plants.

Pitcairnia Jaliscana.†

THE order *Bromeliaceæ* is scarcely represented within the limits of the United States aside from the few species of *Tillandsia* which are found in Florida, and the Spanish Moss (*T. usneoides*) which drapes the trees so abundantly in the swamps and river bottoms of the South from the Dismal Swamp in Virginia to Texas and Mexico. In the extreme western borders of Texas a single species of *Hechtia* has been found as an outlyer of the Mexican flora, and in southern Florida a West Indian species of

*A paper giving a large amount of data bearing upon this subject was contributed by the writer to the *American Naturalist*, for 1884, pp. 1203-1210.

†PITCAIRNIA JALISCANA, Watson, Proc. Am. Acad., xxii. 456. Acaulescent; basal bracts spinosely margined, and with attenuate, barbed appendages; produced leaves furfuraceous beneath, entire, linear, a foot long or more, by three or four lines broad; flowering stem glabrous, with numerous bracts; floral bracts mostly colored, dilated, much longer than the erect pedicels; petals scarlet, linear, nearly two inches long, twice longer than the acuminate colored sepals; stamens and style slightly exerted.

Catopsis; and these are all. The genera with more showy flowers than these, such especially as *Billbergia* and *Pitcairnia*, are more strictly tropical in their character. *Pitcairnia* is, next to *Tillandsia*, the largest genus of the order, and its seventy-five species are found mainly in the region lying east of the Andes from Brazil to Mexico, while none occur outside of the tropics. On account of their highly ornamental flowers a very large proportion of them have been in cultivation in the gardens of Europe, but they are rarities in our own hot-houses.

We have figured for this week (page 197) one of two species of *Pitcairnia* which were discovered by Dr. Edward Palmer in 1886, near Guadalajara in Mexico, the most northern locality on the continent for any member of the genus. The striking colors of the flowers and bracts cannot be shown, but most of the other characters are well represented. The short outer bract-like leaves that cover the swollen base of the stem are prolonged, as in many other species, into slender appendages which are very sharply barbed. The plant is otherwise unarmed. The few proper leaves are long and linear, and are covered on the under side with a white, scurfy pubescence. The floral bracts are mostly of a deep rose color, and the flowers themselves are bright scarlet. Heat and drought are the delight of these plants, or at least they are capable of enduring and thriving under an extreme of both. The present species was found growing in the crevices of rocks in deep, hot ravines, and would probably need, like the rest of the genus, the heat of a stove for its successful cultivation. S. W.

Cypripedium bellatulum is the name given by Professor Reichenbach to a new species which is closely allied to *C. Godefroya*, and which might fitly be described as a giant form of that fine species. The flowers are described by Messrs. Hugh Low & Co. as nearly four inches across, and many of the leaves are ten inches long, and more than one-fourth as wide, and marked as finely as those of *Phalenopsis Schilleriana*, while their under surface is purplish red throughout, or marbled with deep red. The flowers are of perfect shape and profusely spotted.

Plant Notes.

Prunus pendula.

THE tree which is figured on page 198 of this issue is one of the loveliest in flower, and the most pleasing and graceful in habit of all the plants which have been transferred from the gardens of Japan to those of this country. It is the *Prunus pendula** of Maximowicz; a species first described by Von Siebold in his "*Synopsis Plantarum Japonicarum universi regni Japonici*," a work which, unfortunately, I have been unable to find in this country. M. Franchet has kindly examined, however, the copy of this rare book in the Paris Museum, and informs me that Von Siebold in his description of the plant retained the Japanese name *Itozakura*, that is pendulous, for this species, so that Maximowicz, instead of adopting Von Siebold's specific name, translated it into Latin, changing his *Cerasus Itozakura* into *Prunus pendula*. Were the laws of botanical nomenclature rigidly adhered to, it should be known as *Prunus Itozakura*, a change which, under all the circumstances of the case, it is certainly not desirable to make, at least for garden purposes.

Prunus pendula, as now seen in gardens, has probably been somewhat changed by long cultivation from the wild type; indeed, specimens of what is evidently the same plant collected in the forests in the central part of Nipon vary very considerably from it in the length and breadth of the calyx-tube and in the much smaller corolla. Here it is a small tree twelve to fifteen feet high, with wide-spreading, flexible, pendulous branches, those on the lower

part of the stem horizontal, with pendulous ends, the upper widely arching from the trunk. The bark resembles that of the common Cherry tree, although light brown in color. The flowers, which precede the leaves, are produced from scaly, lateral buds in two to four flowered fascicles. They are borne on long, slender, pubescent pedicels, which are destitute of bracts. The tubular calyx and incised calyxlobes are densely pubescent and dark red in color. The petals are half an inch long, ovate or obcordate, pale rose colored, and more than twice as long as the stamens. The ovary is slightly, and the style is densely, covered with long, nearly white, hairs. The leaves are three or three and a half inches long, slightly hairy, when young, on the under side, twelve to fifteen ribbed, ovate and longly acuminate, sharply glandular-serrate, with two conspicuous glands near the base of the blade. The stipules are linear, glandular, and, like the short petioles and young shoots, pubescent. The fruit is black, the size and shape of a pea.

A second species of *Prunus* (Fig. 37), very similar in general appearance to *Prunus pendula*, is confounded with it in gardens here. It has the same general habit and the same long, pendulous branches, but the bark is darker, and hardly to be distinguished from that of the common Cherry tree. The flowers are corymbose on short leafy branches, and the pedicels are conspicuously bracted at the base, and, as well as the shorter and paler calyx tube, are covered with a few scattered hairs. The petals are more narrowly ovate than those of the last species, entire and rarely truncate, much paler pink or nearly white in color. The ovary is quite smooth, but the style is densely coated with hairs. The leaves which appear shortly after the opening of the flowers are broader, thinner and more deeply and irregularly cut on their margins and are only 6-8 ribbed. They are pubescent on the under side, as well as the petioles and young shoots, and have two conspicuous orange-colored glands at the base of the blade. Their larger stipules are three-lobed and glandular. The corymbose inflorescence of this plant, the forked stipules and the texture and color of the young leaves point to some form of *Prunus Pseudo-Cerasus*, but the style is conspicuously hairy, and I therefore very doubtfully refer it to Maximowicz's *Prunus Miqueliana*,* authentic specimens of which, however, I have not been able to examine.

The two species are cultivated in nurseries under the name of *Cerasus Sieboldii pendula flore roseo*, and *flore carneo*.

Under the name of *Cerasus Herinquiana* M. Lavallée described and figured in his *Icones*, t. xxv., a plant which seems identical with the second of these two Cherries.

These plants were sent to the Arnold Arboretum several years ago from one of the Dutch nurseries. Both species flower here every year and are exceedingly hardy, requiring no special care or cultivation. They can be increased by grafting upon the common Cherry. The grafts should be inserted close to the ground in order to secure the peculiar habit and full beauty of these trees. When grafted as standards, as is often the case in nurseries, they are then less graceful and lose much of their peculiar habit of growth.

Our illustration is from a fine specimen on the estate of Arthur Blake, Esq., in Brookline, Massachusetts.

C. S. S.

The finest varieties of the common Lilac (*Syringa vulgaris*) in the large collections in the neighborhood of Boston are Philamon and Marie Lagrange. The former has large, broad, compact panicles of dark purple-red flowers, nearly half an inch across the limb when expanded. This has the deepest and richest colored flowers of all the Lilacs. Marie Lagrange has very large pure white flowers in immense panicles. Both varieties are of European origin; and they grow rapidly and vigorously, and soon make fine specimens.

C. S. S.

**Prunus pendula*, Maximowicz, *Bull. Acad., St. Petersburg*, xi. 690.

"*Cerasus Itozakura*," Siebold, *Pl. Econ.*, 360.

P. subhirtella, Miquel, *Procl.* 23, in part;—Franchet and Savatier, *Enum. Pl., Jap.* 1, 118.

Cerasus pendula rosea, Siebold, *Catal.*, 531.—*Floral Magazine*, x. t. 536.

Sou isi Kaido, Ito zakoura, Savatier. *Kwa-wei*, 72, *Arb.* 1, t. 3.

**Prunus Miqueliana*? Maximowicz, *Bull. Acad., St. Petersburg*, x 692.

P. incisa, Miquel, *Procl.* 25 (not Thunberg).

Cerasus Herinquiana, Lavallée, *Icones*, t. xxxv.

Cerasus pendula rosea, Hort. in part.

Cultural Department.

Thinning Fruits.

THE systematic thinning out of fruit has hardly received the attention it deserves, either at the hands of commercial growers or of amateurs. The former class particularly argue

seasons some varieties of fruits set far more than the trees can fully develop and mature. In such cases natural or artificial thinning must be resorted to, to secure satisfactory results. The army of curculios, codlin moths, birds and fungi assist in this matter with great energy, but generally with little discrimination. And yet without their aid, it must be confessed that the fruit grower would often find thinning an imperative duty.

If half the crop of Apples, Pears or Peaches on a tree were removed, those remaining would frequently aggregate as much in bulk as the whole would if allowed to remain, and would probably yield as much money, to say nothing of the diminished labor of handling. Again, well grown fruit meets a readier sale. Such Pears as the Seckel, which grow in clusters, can be thinned with decided benefit, and perhaps it is the small varieties generally that pay the best for thinning, as increase of size is more readily appreciated in the smaller kinds. Apples and Pears which incline to cluster, even in twos, are generally more defective, by reason of insect depredation, than those borne singly. The Beurré Bosc is one of the latter kind and not prone to overbear, and if attacked by insects, it is generally in the calyx. The Bartlett, when well set, is in pairs and triplets, and the point of contact is generally the seat of insect operation. The early thinning of these clusters to single specimens, therefore, gives fairer and larger fruit for the trouble. On the other hand, Marie Louise has never borne for me a fine flavored specimen except on a light crop; with a full crop, even when severely thinned, they attain cooking qualities only, which is even more than I can say of the Mount Vernon. Indeed, it is yet an unsolved problem with me whether the lightest kind of a crop of the latter would give me specimens of tolerable table quality. Clairgeaus are very prone to overbear here and thinning is an absolute necessity if their quality is to be brought above mediocrity.

Peaches can be fairly thinned by pruning the trees, which is the most feasible method. But when this is neglected and the trees are full set, the removal of half to two-thirds of the fruit, after the natural dropping is over, will be found beneficial, not only enhancing the size, quality and value of those remaining, but saving the tree from breaking down. With Peaches it is size that tells, and the larger the Peach, the greater the proportion of flesh to stone. A friend in California writes that the Peach trees there did not contain more than one-third as many as lay on the ground after the Chinamen had completed the work of thinning. With Chinese labor here, or his rate of wages, this question of profit in our large Peach areas, with their enormous products, would still be a debatable one, and whether our markets would stand a sufficient advance in prices to compensate for the increased expense, is, to say the least, problematical.

Thinning Strawberries is sometimes practiced to secure extraordinary berries for exhibition, but the only practical way to improve the quality of the crop is to thin the plants. If allowed to run in thick matted rows they generally become too crowded for the best results, and many plants must, of necessity, become weak and unfruitful. No better evidence of this fact can be adduced than to compare the crop on plants grown in hills with the same number of plants in thick matted rows. The hill system means extra labor, it is true, but the improved quality of the crop will go far to compensate for it.

Pruning is also the best method of thinning and improving the quality of the Grape crop. With judiciously pruned vines to start with, the after thinning is simple and easy. All that is required is to rub off the superfluous buds and shoots. A vine producing twenty-five pounds of fruit in clusters of half a pound and upwards, would bring more money than one producing the same number of pounds in clusters of one-quarter of a pound each, give more satisfaction to the grower for home consumption, and save labor and time in gathering.

The sum of the matter is, that in most cases, larger, more



Fig. 35.—Pitcairnia Jaliscana.

that in the case of large trees it is often impossible, and that even when it can be done, the time and labor expended bring no corresponding profit. I am inclined to think, however, that when it is intelligently practiced the thinning of fruit almost always pays, and often pays large returns. In favorable

beautiful and finer fruit can generally be raised when a very considerable portion of the sets are removed. Apples or Peaches when crowded closely along a limb are no more able to attain full development than Beets or Cabbages when set too closely in a row. It will generally pay to reduce the number of sets in some way. The exceptions in the case of Pears, mentioned above, simply prove that some varieties will not respond to this treatment in some places. These facts the fruit grower must learn by experience. The commercial grower raises fruit for the profit. He must study his market to know how far his gain from increased quality will warrant the increased expense of thinning. The amateur, who prides

fortunate that they have so generally gone out of fashion. When grown as standards to the height of two or three feet they make plants of striking beauty. They are all rapid growers, and need a liberal supply of water when making wood and flowers. A correspondent of the *Gardener's Chronicle* makes the following selection of varieties from a large collection at the gardens of the Royal Horticultural Society at Chiswick.

One of the freest and strongest grown is named *Ver Luisante*; orange-red with orange centre, deepening in color with age; the young flowers open orange, and deepen in color as they mature. This would make a good exhibition specimen when well grown. *Le Styx* has very fine,



Fig. 36 *Prunus pendula*

himself on fine specimens for exhibition, or for his table, does not stop to consider the financial side of the question. He simply takes the necessary steps to secure what he wants. His labor in this direction is often really a pastime, and if he does not reap his reward, in his satisfaction from day to day, he is pretty certain to do so when his crop matures. Those who have not studied and experimented in this field will be surprised to find that in many cases the very finest fruit is produced only after thinning has been carried on to an extent that would seem to the novice most extravagant.

Montclair, N. J.

E. Williams.

Lantanas.—These are properly classed among green-house plants, but they make admirable bedding plants, and it is un-

rich, deep orange-red flowers, produced in large and bold trusses; it is a very free grower also. *Mons. Boucharlat* has fine and showy pale orange flowers; the individual blossoms are large, and they are produced in very fine trusses that are bright and striking; it is a remarkably good grower also, being strong and robust. *La Patriote* is a very pretty variety; the flowers open pale golden-orange, changing to pink, and with a rosy-pink centre; a fine and distinct variety. *Venusta* is salmon-colored with orange centre; very fine in the pip and truss; distinct, and very good. *Clio* opens gold, and gradually changes to lovely rosy-purple; fine pip and truss, and a good, free grower. *Triomphe du Commire* is of a pale lilac-pink color, deepening in color with age; fine pip and truss, and it can safely be marked very good. *Grisette*

is lilac and mauve, tinted with rose; the flowers open pale lemon, and change to the above; it is a good grower and very free. *Rosa Mundi*, rosy-purple, is very pretty indeed. *Souvenir d'un Ami* opens gold; the flowers then become orange-salmon, and finally the salmon deepens to rosy-purple; very fine pip and truss, and good habit. *Comtesse de Beneval* opens yellow, and changes to pale rosy-pink; it is a very pretty and free variety. *Meteore* opens cream, and changes to pink and pale rosy-lilac; it is a pretty and pleasing variety.

Coming now to what may be termed the yellow-flowered varieties, probably the best is *Reveille*, deep yellow in color, very fine and free. *Pluie d'Or* is pale golden-yellow, flowers and trusses alike small. *Figaro*, bronzy-yellow, is very free of bloom also. *Bijou*, orange and gold, is of dwarf habit, very free, and makes an excellent pot plant. *Grappe d'Or* is of a fine hue of gold, very dwarf in growth, and exceedingly free. *Californie* is of a distinct pale yellow color, good close habit, and very free indeed.

One of the best whites is *Innocence*; it opens pale lemon or

side, and this will be especially beneficial if the bark shows signs of loosening or peeling off. Sprinkling the tree occasionally will help to check too rapid evaporation; to the same end the surface of the ground should be stirred and mulched, but the branches should not be cut back to diminish the leaf surface.

S. A.

Why Vines Winter-Kill.—The hardiness of vines is generally based on the ability to pass through the winter safely, but the ability to do so is dependent on their condition in the fall when they go into winter quarters. In my vineyard are numbers of vines of Roger's Hybrids, such as *Wilder*, *Lindley*, *Merrimack*, besides *Niagara*, *Brighton* and *Pocklington*, that appeared when pruned in December to be thoroughly ripened and matured so far as we could judge. Many of these this spring are winter-killed, even to the root in some cases. This condition is unquestionably due to mildew. These vines that were mildewed most are injured most, while other vines of the same varieties that escaped this scourge are budding to the re-



Fig. 37.—*Prunus Miqueliana* (?)

primrose, then changes to white; of good habit and very free. *Bouquet Blanc* is yellow, changing to white. Lastly comes *Le Lis*, which opens pale yellow, and changes to pure white; good habit and very free. Perhaps, taking all things into account, this is the best white grown.

The best dozen varieties, selected from the Chiswick trial, will be found in *Ver Luisante*, *Le Styx*, *Mons. Boucarlat*, *La Patriote*, *Venusta*, *Clio*, *Triomphe du Commire*, *Comtesse de Beneval*, *Reveille*, *Bijou*, *Innocence* and *Le Lis*.

Newly Transplanted Trees.—Young trees that were transplanted this spring generally look well, because of abundant rains, but it should be remembered that dry weather may come and with it comes danger. A vigorous growth of new shoots is proof that healthy new roots have formed, and that they are furnishing all the moisture needed to supply the leaves. But where there is little new growth, or none at all, it may be inferred that the root growth is small and unable to supply the tree with sufficient moisture. In such cases it is good practice to wrap the trunks, or shade them on the south

most extremities. Winter hardiness is dependent on summer hardiness, and the latter is of most importance.—*Orchard and Garden*.

Notes from the Rock Garden.

THE handsomest flower in the Rock Garden this week is the Siberian Columbine (*Aquilegia glandulosa*), the earliest of the genus to flower here, with the exception of the native *A. Canadensis*. It is a dwarf species growing eight or ten inches high, the flower stems each with one to three flowers, which have bright blue sepals fully an inch and a half long, pure white petals, and short and very stout, incurved spurs. The Siberian Columbine is perfectly hardy, but it is a plant of rather delicate constitution, or rather it is short-lived, and in order to obtain the best results it should be treated as a biennial and not depended on to flower more than once. If the seed is sown very early in the spring (it is better to sow it in heat during winter), the plants will be strong enough to transplant

early the first season into nursery rows, and then they can be transplanted again in the autumn into the rockery or herbaceous border, where they will bloom the next spring. Few plants better repay this trouble.

Thermopsis fabacea is a hardy Siberian perennial Pea, with pale foliage, and tall, erect racemes of large, clear-yellow flowers, which is just now in all its beauty. It spreads rapidly from underground shoots and is almost too rampant in its growth for the rockery, and is better suited to a large herbaceous border, where, if left undisturbed, it will soon spread over a considerable area.

Tiarrella cordifolia, known as the false Mitre-wort from its resemblance to its near relative the *Mitella*, is now a beautiful object in the shady parts of the rockery, where it is well established and thoroughly at home. It is a member of the Saxifrage Family, with heart-shaped, hairy leaves sharply lobed and toothed, and a solitary, slender, leafless scape a foot high, bearing a simple raceme of small, pure white flowers. The False Mitre-wort is found in cold, northern woods and on the Alleghany Mountains.

The small, yellow Lady's Slipper (*Cypripedium parviflorum*) is in flower. It is a pretty species, much smaller in all its parts than *C. pubescens* mentioned last week in these notes, rarely growing more than a foot high. It has a bright yellow lip flattened above and darker brown sepals and petals. The flowers are fragrant. It is a not infrequent inhabitant of northern bogs and wet woods.

Clintonia borealis is a stemless, perennial plant of the Lily Family, which recalls to the lovers of nature the name of De Witt Clinton. It is now in flower in a shady corner of the rock garden. The flowers are greenish yellow, half an inch long, with reflexed segments, and are produced in a few-flowered umbel, upon a low, slender, naked scape sheathed at the base by the stalks of the large, oblong leaves. The blue, oblong berries which ripen in August are very ornamental. This pretty plant inhabits northern woods, and is found also in those which cover the Alleghany Mountains; it is easily transplanted into the garden, when, if in a shady position and deep, rich soil are provided, it soon becomes thoroughly established.

Ixiolirion Tartaricum, var. *brachyantherum*, is a variety of the well known *I. Tartaricum*, a native of central Asia, and a member of the Amaryllis Family. It is a very hardy bulbous plant of easy culture, with narrow, grass-like leaves, trumpet-shaped, deep blue flowers, with reflexed segments, two inches in diameter when expanded, and borne in a loose terminal umbel, upon a scape twelve or eighteen inches high.

The latest Tulip in bloom is the dwarf *T. Biebersteiniana*, grown in some foreign nurseries as *T. Persica*. It is a native of southern Russia, the Caucasus and Persia, extending as far east as Turkestan. The flowers are an inch and a half deep, bright clear yellow, with acute segments, the three outer ones being somewhat broader than the others and flushed with pale green on the outside. The yellow stamens are bearded at the base. The scape rarely exceeds six inches in height, bearing below the middle two or three narrow, pale, glaucous, channeled leaves. This is a very attractive little plant which should find a place in every collection of hardy bulbs.

Smilacina bifolia, or, as it is sometimes called, the Wild Lily-of-the-Valley, is a common northern plant with creeping root-stalks, often forming wide carpets, especially on rather dry knolls occupied by the White Pine and by the Oaks. It is a dwarf plant, three or four inches high, with two or rarely three heart-shaped clasping leaves, and short, single racemes of small, pure white flowers. It is easily cultivated and admirable for carpeting the shady parts of a rock garden, or to plant under shrubs and other taller growing plants.

Solomon's Seal (*Polygonatum multiflorum*) once was often found in American gardens, where at this season of the year it was a conspicuous and beautiful object. Now this handsome plant is so rarely seen here that it seems entirely unknown to people of this generation. Solomon's Seal has stout stems two feet or more in height, inclined to one side, alternate, ovate leaves, with pendulous, tubular, white flowers tipped with green, in axillary clusters. It is a bold and striking plant, well adapted for naturalization along the borders of shrubberies or wood-walks, where, if planted in deep rich soil, it soon makes broad clumps. *Polygonatum multiflorum* is widely distributed through central Europe and Russian Asia.

Few persons realize the beauty of our common wild Maiden-hair Fern (*Adiantum pedatum*) in cultivation, or know what a useful plant it is for a shaded rock garden, where it soon spreads and throws up a profusion of its graceful fronds. It bears exposure to the sun, too, and is an excellent pot plant for the summer decoration of rooms or piazzas.

Boston, May 30th.

C.

Notes from the Arnold Arboretum.

Prunus Jacquemontii is flowering here for the second year. It is a common plant in the drier regions of the north-west Himalaya from the province of Garwhal northward into Thibet and westward to Afghanistan, and is found at elevations varying from 6,000 to 12,000 feet. *Prunus Jacquemontii* is a shrub, which in the native country is said to attain a height of from six to ten feet, with long, slender, unarmed, divaricate branches, covered with pale gray bark. The leaves are two to two and one-half inches long, ovate or ovate-lanceolate, acute, sharply serrate, pubescent when young, on the mid-rib and primary veins, short petioled and destitute of glands. The flowers appear just before the leaves; they are solitary or often in pairs; very short pediceled, and quite cover the branches for several feet of their length. The tubular cylindrical calyx is about a quarter of an inch long, smooth, glabrous and striated, and twice the length of the acute lobes, which are hairy on the inside. The overlapping petals are bright pink, nearly circular, and about a quarter of an inch across. The ovoid ovary is quite glabrous, and is contracted into a long, narrow style. *Prunus Jacquemontii* has not produced fruit here yet; it is described as "globose, as large as the finger nail, red, juicy; stone nearly globose, a quarter to one-third of an inch in diameter, quite smooth." There is every prospect that this exceedingly interesting little Cherry will prove perfectly hardy in this climate, and that it will become a garden ornament of very considerable value. Dr. Aitchison, of the late Afghan Boundary Commission, who detected this plant in the Kuram valley and first introduced it into cultivation, in speaking of it says: "When the fruit is ripe and the plant is covered with it, which is usually the case, it forms a very pretty object in the landscape. It would be worth cultivating for ornamental purposes."*

The Dwarf Cherry of northern China (*Prunus humilis*) is in bloom. It is a low, delicate shrub, scarcely exceeding two feet in height, with virgate branches densely covered with pubescence during their first year, small, elliptical or obovate doubly serrate leaves, which are pubescent when young and small, pink or nearly white flowers, solitary or two or three together, and followed by small, edible, acidulous red fruit, rarely exceeding a third of an inch in diameter. It is a pretty little species, but less hardy and less valuable from a garden point of view than the closely allied *Prunus Japonica*, with which it has often been confounded, but which may be distinguished from it by its glabrous branches, ovate-lanceolate, long pointed, simply serrate, reticulate-veined leaves, and by its rather larger, deeper colored flowers. The double-flowered, white and rose-colored varieties of *Prunus Japonica* are not surpassed in beauty by any of the dwarf shrubs in the collection now in bloom; they are very hardy and are often seen in gardens. As these varieties of *Prunus Japonica* appear in garden catalogues under a variety of names, it may be an assistance to cultivators to add that to this species belong the plants grown under the names of *Prunus glandulosa*, Thunb.; *P. Sinensis*, Pers.; *P. Chinensis*, Blume, and *Amygdalus humila*, Sims. *Prunus Japonica* is a native of Manchuria and northern China as well as of Japan, where it is generally cultivated both in its single and double forms.

Prunus maritima, the Beach Plum, is a handsome plant when in flower, and one which is too seldom seen in gardens. It is a common coast-plant, from Maine to Virginia, often covering sandy dunes adjacent to sea-beaches. It is a low compact shrub, rarely more than three or four feet high, which is now covered with small white flowers, which in the late summer are followed by a profusion of handsome globular purple or scarlet fruit, which is collected in large quantities at some points on the New England coast and sold in the markets for preserving. This plant, although only found growing naturally in light sandy gravel, flourishes and flowers profusely when transferred to the garden. The little Wild Cherry (*Prunus pumila*) of the northern United States blooms here a few days earlier than the Beach Plum. The common eastern form is a low shrub, rarely reaching a height of two feet; but western plants sent to the Arboretum from the shores of Lake Michigan, near Chicago, have tall virgate, erect branches, six to eight feet high. This variety flowers nearly ten days later than the eastern plants, and reproduces itself from seed. The small white flowers, two or three together, are produced in the greatest profusion. The fruit is hardly larger than a pea, bright red and destitute of flavor. The Dwarf Wild Cherry is found on dry, rocky or gravelly banks or hill-sides, and is an excellent subject for planting in waste places, or for an

* Jour. Linn. Soc., xviii. 51.

undergrowth among other shrubs, or trees. It is very hardy, and easily cultivated.

The Ground Cherry (*Prunus Chamæcerasus*), with its small, glossy, coriaceous leaves, and small, abundant white flowers covering at this season of the year the long, slender branches, is a familiar object in many old-fashioned gardens in the United States, where it is generally seen grafted on a tall stem of the common Cherry tree, and forming a small and rather formal weeping tree. It is more attractive, perhaps, when grown naturally and on its own roots. It then becomes a graceful, low-branching bush, two or three feet high, gradually spreading over a considerable space. The Ground Cherry remains in bloom for a long time, and is perfectly hardy. A native of central and northern Europe and Russian Asia, it has been cultivated in gardens during more than three centuries. *Prunus avium*, the European Bird Cherry, the *Merisier* of the French, is in flower ten or twelve days later than the common Cherry tree (*P. Cerasus*). It is a handsome small tree, with ascending branches, coarsely toothed, soft leaves appearing with the large flowers, which are produced two or three together in sessile umbels, from lateral, scaly, leafless buds, and oval or ovate, dark red or black fruit. It is the origin of the Black Mazzard, the Black Heart and other garden cherries. A variety with double flowers, known since the days of Tournefort, should find a place in every collection of ornamental trees. The pure white, semi-double flowers are produced like those of the species with the leaves; they are composed of about 40 petals, thirty stamens and of an abnormally developed green abortive pistil. This is a smaller tree than the species, although equally hardy. It is sometimes known as *Prunus ranunculiflora* and as *P. avium multiplex*.

Some of the early flowering Hawthorns are in bloom. Of these the earliest and the handsomest is *Cratægus subvillosa*, a form, perhaps, of the exceedingly polymorphous *C. coccinea*, but, for garden purposes at least, sufficiently distinct to be considered a species. It is the largest of the Thorns growing spontaneously in the northern States, and one of the largest and most widely distributed of the American species, being found from eastern Massachusetts to Missouri and through the south-western States to the Sierra Madre Mountains of north-eastern Mexico. It is more common and better characterized west of the Mississippi River than in the eastern States, attaining, like several other species of this genus, its greatest size and beauty in the country adjacent to the Red River. *Cratægus subvillosa* is a round-headed tree, twenty to thirty feet high, with a stout short trunk, covered with light gray, scaly bark, rigid, smooth branches armed with long, stout, chestnut-brown spines. The leaves and broad foliaceous stipules are larger than on any other American Thorn; they are thin, glandular, especially on the petioles, roundish-ovate, cordate, wedge-shaped or truncate at the base, incised, and very sharply serrate, scabrous above, the lower surface, as well as the young branches, peduncles and calyx, densely tomentose. The flowers, in broad, flat corymbs, are produced in profusion; they are an inch or more across when expanded, pure white, the disk often bright scarlet. This species is, perhaps, more beautiful in the late summer than at this season of the year. Then it is loaded with large, bright, scarlet fruit, which is often more than an inch in diameter, and which is covered with a conspicuous bloom. The fruit of this species is the largest and by far the most showy produced by any of the Thorns which are hardy here. Unfortunately, it falls as soon as ripe, and long before the foliage takes on its brilliant autumn coloring. *Cratægus subvillosa* requires deep, rich soil in which to develop its greatest beauty. No other Thorn is more hardy here, or grows more rapidly into a handsome, shapely tree. *Cratægus Douglasii* is also in flower. This is the Thorn of the north-west coast, where, in the neighborhood of streams, it sometimes attains a height of thirty or forty feet. It is a handsome, round-headed tree here, worthy of a place in any collection, and interesting, too, in the fact that it is one of the very few ligneous plants peculiar to the coast region of Oregon and Washington Territory that is perfectly hardy in New England. It has stout, rigid branches, armed with short, stout, russet-brown spines, ovate, cuneate, coriaceous leaves one or two inches long, and small corymbs of white flowers a quarter to a third of an inch across, followed by small, black, edible fruit, which ripens here in August and soon drops.

Among foreign Thorns, *Cratægus sanguinea* and *C. nigra* are in bloom. The former is a widely distributed species through Siberia, Mongolia, northern China and Manchuria. It is well characterized by its broad, glandular stipules, shining, chestnut-brown, unarmed branches, smooth, purplish young shoots, and by the dark green, broadly-ovate leaves, wedge-shaped at the base, cut-toothed, and quite glabrous,

except in its axils of the primary veins. The flowers are white with purple stamens, two-thirds of an inch across when expanded, and followed during the summer by small, purple, or sometimes red fruit. This is a very hardy species, which becomes here a small tree, ten or fifteen feet high, well worth cultivating for its early flowers and handsome dark green foliage. It is the *Cratægus purpurea* of Loudon's Arboretum, ii. 822; and is well figured in Pallas' "*Flora Rossica*," t. 11. *Cratægus nigra*, a native of Hungary, is here a hardy and fast growing tree. It has pale green leaves, sinuately lobed, sharply serrate, broadly wedge-shaped or truncate at the base, and covered on the under side, like the young shoots, petioles, peduncles and calyx, with a thick white tomentum. The rather large creamy white flowers are followed by handsome black fruit, which hangs upon the branches until the late autumn.

The Tartarean Honeysuckle needs only to be mentioned here, that attention may be directed to the fact that it is one of the very hardiest of all shrubs, which might be more often grown than it is at present, in the extreme northern parts of this country. There are many fine varieties in the Arboretum collection with flowers ranging in color from pure white through pink and rose to red. The handsomest are from St. Petersburg, where a great deal of attention has, in late years, been given to the improvement of this shrub. *Lonicera Ruprechtiana* is a very hardy bush Honeysuckle, a native of Manchuria, which here forms a handsome, erect shrub, six or eight feet high by as much through, and which in its native country, according to Maximowicz, its discoverer, is sometimes a small tree 20 feet in height. It has ashy-gray branches, pale, ovate, blunt or acuminate, entire leaves, an inch or an inch and a half long, with prominent reticulate veins, slightly downy on the under side. The flowers, which have no perfume, are produced in great profusion. They are white at first, but soon turn light yellow or straw color, long peduncled, the slender tube of the corolla an eighth of an inch long and scarcely half the length of the narrow divisions of the limb. The beauty of the fruit of this species excels that of any Honeysuckle in the collection. It is a third of an inch in diameter, bright scarlet and almost transparent, remaining a long time on the branches. *Lonicera Ruprechtiana* is one of the most desirable of the perfectly hardy shrubs of recent introduction, and is well worth cultivating for the beauty of the fruit alone.

The Wayfaring-tree (*Viburnum Lantana*) is the earliest Viburnum in flower in the collection, although the Moosewood (*V. lantanoides*), a far handsomer plant, but the most difficult, perhaps, of all the American shrubs to establish in the garden, has been blooming in the cold, damp woods of the north for nearly two weeks. *Viburnum Lantana* is a stout, tall, much-branched shrub, very common through central and southern Europe, and perfectly hardy in this climate. It bears ovate, sharply serrate leaves, three or four inches long, cordate at the base, soft and velvety on the upper side, densely covered, as well as the young shoots, with white, mealy down. The small, white flowers in dense cymes, two or three inches across, are followed by handsome, purple-black, oblong fruit.

Two exotic species of *Amelanchier* are in bloom several days after the native species have shed their petals, *A. vulgaris* and *A. Asiatica*. The former is a dwarf shrub or more rarely a small tree, with roundish-oval leaves downy on the lower side, long petals and blue-black edible fruit. It is a native of the mountainous regions of central Europe. *A. Asiatica* is a small, graceful tree here, with long, slender branches with smooth, gray bark, ovate-elliptical, acute leaves densely covered, when young, with white wool, and compound racemes of handsome, pure white flowers. The fruit has not yet been produced here. This very hardy and desirable plant was found by Von Siebold in Japan, where it is very commonly cultivated in gardens and in the neighborhood of Temples, although probably a native of northern or central China. It is well figured in the "*Flora Japonica*," t. 42.

Staphylea trifolia, the eastern-American representative of the Bladder-nuts, is in flower. The drooping, raceme-like clusters of white, bell-shaped flowers are very pretty; but as an ornamental shrub for the garden it is in every way inferior to *S. pinnata*, a native of southern Europe, with bolder foliage, and larger clusters of pure white, fragrant flowers. This is one of the handsomest of the European shrubs which can be cultivated here successfully; and it should find a place in every garden. It is recommended as a good subject for forcing in winter. The Japanese *S. Bumalda* is very hardy, but the foliage is small and the flowers are much less conspicuous than those of the eastern American or of the European species, and it will not be often cultivated except as a curiosity. The very handsome and exceedingly rare species of northern California

(*S. Bolanderi*) has not yet been introduced into cultivation; and the *S. Emodi* is not in this collection.

The earliest *Elæagnus* in flower is the Japanese *E. longipes*, a handsome shrub, six or eight feet high, with pale green, oval punctate leaves, stellate pubescent on the upper side and covered on the silvery under side, when young, as are the new shoots, peduncles and corolla, with small ferruginous scales. The orange-colored flowers are long-stalked, with a long, slender tube and spreading limb, half an inch in diameter when expanded. The handsome, transparent, orange-colored, punctate fruit has an agreeable sub-acid flavor. This is a very hardy, free-growing plant well worth cultivation.

None of the evergreen *Berberis* (*Mahonia*) are very hardy in this climate, and they can only be grown when carefully protected in winter. The hardiest is *B. nervosa*, now flowering here for the first time. It is a dwarf evergreen shrub, with a smooth stem only a few inches high, producing from a terminal bud pinnate leaves one or two feet long the numerous acuminate leaflets palmately nerved, and elongated racemes of handsome yellow flowers. The oblong, blue fruit is a quarter to a third of an inch in diameter. *Berberis nervosa* is a native of the north-west coast.

May 30th.

7.

The Forest.

Forest Tree Planting on the Prairies.

AMONG the various methods of planting trees on the prairies, two have been recommended as more expeditious than digging holes for the roots and covering with the spade. One is to mark off the ground both ways as for a corn crop, and at the intersection of the lines to strike the spade down vertically, and then push the handle forward and backward, leaving a slit in the ground. Into this the tree is then inserted, the earth is pressed with the foot and the tree is planted. This method may do for inserting cuttings, or such trees as will readily root from the stems, but the roots will be cramped into an unnatural position, and aside from this, as the ground dries it will shrink, allowing the air to penetrate and destroy the crowded roots. I have examined many plantations made in this way, and never saw one—except in the case of Poplars—where there were not more dead trees than living ones at the end of the season.

Another method often recommended, is to mark the ground one way and plow furrows the opposite way, and then place a tree in the furrow at every cross mark, and plow the earth back over the roots. This is also an objectionable method, for it is not possible to plant all the trees at the proper depth, nor to tighten the roots properly. And even if that is attempted it will occupy more time than it would require to plant them with the spade. I never saw a plantation treated in this way that did not show many failures, and an unevenness in the growth of the trees, aside from being more troublesome to cultivate than if properly planted. All that is claimed in favor of either of these methods is that it is more expeditious than planting with the spade.

I will now describe fully, the method which long experience has convinced me is not only the best, but, all things considered, the most expeditious way, and the only way in which a great number of inexperienced workmen can be handled to advantage.

As many land owners who are not farmers plant forests on the prairies, I will commence with the prairie in its natural condition. It is very important that the prairie sod should be "broken" at the proper time, otherwise the planting will be delayed at least one year, and even then will not be in as good condition as if broken at the proper time.

Break the prairie in June or at the time the grass is in the most thrifty condition. Break quite shallow, not deeper than two, or, at most, three inches, as the greater the succulent growth and the shallower the breaking, the more surely will the sod be killed during the summer. Late in August and during September of the same year, turn the sod over lengthwise of the furrow, and deep enough to

bury the sod and leave two or three inches of earth over the entire surface. If it is not to be planted in the autumn leave the ground in this condition until the following spring, when the harrow and roller will put the land in excellent condition for planting. If planted in the fall run the harrow and roller after the plowing is finished, mark off the ground both ways for planting, strip the leaves from off the young trees, if frost has not already done so, then gauge the tree digger so as to cut the roots to the length required—six to eight inches, according to the depth and quality of the land—and commence planting.

The workmen are divided off into companies of three each, or two men and one boy, the two men with spades, the boy with a bundle of trees—the trees having previously been tied in bundles of 100 each. The two men with spades plant on adjoining rows, the tree holder walking between them. The planter strikes his spade vertically into the ground on the running line close up to the cross mark, raises a spadeful of earth, the boy inserts the tree, the earth is replaced, the planter places his foot close up to the stem of the tree, bearing on it his full weight—and passes on to the next mark. This tightening of the tree is very essential, and must be insisted on. The boy is kept quite busy attending two planters, but after a little experience he will learn to bring each tree out of his bundle with a quick circular motion that will spread out the roots when placed in the ground, about as evenly as they could be placed with the hand.

By this method the trees are planted in a straight line, and all at the proper depth, the roots are spread and the earth packed firmly over them. Two men and one boy will plant 4,500 trees in a ten-hour day, being two and one-half trees planted per minute for every man and boy employed, and the land will be left perfectly smooth and level for cultivating, making this not only the best, but the most expeditious way to plant forest trees on the prairie.

Robert Douglas.

Correspondence.

Northern Range of the Western Service-berry.

To the Editor of GARDEN AND FOREST:

Sir.—According to Sir John Richardson, the Service-berry (*Amelanchier alnifolia*), which was figured and described in your last issue, produces fruit in the Mackenzie Valley as far to the northward as lat. 65°. It appears to require not only a considerable amount of summer heat, but also a climate not very humid, and though present on Vancouver Island and found by me in 1878 in the Queen Charlotte Islands, probably attains its northern limit on the west coast at the last named places, as it is there of rare occurrence and depauperated in appearance.

The examination of the basins of the Stikine and Liard rivers and the head-waters of the Yukon, carried out last summer, afford some information on the occurrence of this species in the region between the west coast and the Mackenzie Valley. The *Amelanchier* was found in abundance, though as a small shrub only, near Glenora and Telegraph Creek (lat. 58°), in the Stikine Valley, to the east of the Coast Mountains, where the climate is dry and contrasts very remarkably with that of the seaward side of the same range. It was here in full flower about the 20th of May. It was again seen in the autumn on Tagish Lake, near the head-waters of the Lewes Branch of the Yukon, a few miles north of the sixtieth parallel and at a height of 2,150 feet above the sea. This locality holds a position similar to the last with respect to the Coast Mountains, and it appears probable that the *Amelanchier* may occur throughout the intervening country in favorable situations, though evidently near its limit on Tagish Lake, where the fruit seemed scarcely likely to ripen.

The *Amelanchier* was again found, farther inland, in the dry eastern lee of the Cassiar Mountains, growing on gravelly terraces along the Dease River (lat 59° 10', long. 129°). A line drawn to the northward of the various localities above mentioned will, I believe, define with near approximation to accuracy the north-western range of the *Amelanchier*, which is not mentioned in Rothrock's list of Alaskan plants nor in that of Dall.

From facts observed in several districts in British Columbia,

as well as in the Peace River country on the eastern slope of the Rocky Mountains, I believe that the degree and length of summer heat requisite for the development of this species closely corresponds with that necessary for the growth of wheat, and its distribution thus appears to possess a peculiar interest, regarded as a criterion of summer heat in places where cultivation has not yet been attempted. It may be mentioned that wheat has been successfully grown at Telegraph Creek on the Stikine and that barley is habitually cultivated there.

Ottawa, Canada.

George M. Dawson.

To the Editor of GARDEN AND FOREST :

Sir.—When trees are planted in a lawn shall the grass be permitted to grow directly around the trees, or shall a circular space be left around them ?

Shall trees be trimmed when they are first planted, and if so, in what manner ? Will it be necessary or advisable to trim them the second year ?

Providence, R. I., May 19th.

C. A.

[Trees, especially when first planted, will grow more rapidly if the ground about them is kept free from grass and weeds by frequent cultivation. A top dressing of well rotted manure spread over the dug space about the tree in the autumn, once in every two or three years, and forked into the ground the following spring, is an assistance to all deciduous trees. In the case of low-branching Conifers, like Firs, Spruces, and some Pines, standing in grass where the lawn-mower is used, it is a good plan to cut a circle in the turf a few inches wider than the lower branches of the tree. A tree protected in this way cannot be reached by the lawn-mower, even in the hands of the most careless workman, and its lower branches will be saved from mutilation.

It is a not uncommon practice to prune trees severely at the time they are transplanted. All the branches and a considerable part of the stem are cut away sometimes, especially in the country, and nothing but a bare pole planted. Trees mutilated in this manner often live, and sometimes eventually grow into fine specimens. The object of leaves is to elaborate sap, and the more leaves a plant carries, the more vigorously it will grow. It is a mistake, therefore, and an injury to the tree, to reduce its leaf surface just at the time when it needs all its vitality to overcome the serious shock which transplanting gives it. If a transplanted tree needs pruning to improve its form or to remove a dangerous fork in the main stem, or from any other cause, it is much better to wait for a year or two, until it gets a good hold of the ground, rather than to prune it at the time of planting. The subject of tree pruning in its various aspects will be discussed in the columns of this journal, and it is only possible at this time to say, generally, in answer to the inquiry of our correspondent, that the objects to be attained in pruning an ornamental tree are to so form the head that all the branches may be exposed to the light, to stimulate the growth of feeble and check the too rampant growth of vigorous branches, and to prevent the forking of the main trunk too near the ground, and so preserve it from splitting. The one rule which should be followed always in pruning a tree, is, that when a branch is to be cut off, it should be cut close to the trunk, so that no stub is left to decay and carry rot into the heart of the tree, and that when a branch is shortened, it should be cut back, for the same reason, to a lateral branch or bud. If this rule is followed a well established tree cannot be injured and often can be greatly improved by pruning.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Can you kindly advise me what to plant to make a hedge against a fence about four and a half feet high which is shaded, but not at all densely, by a few tall Cherry and Ailanthus trees, and which faces the north-east ? Would Red Cedar do in such a situation ? I should prefer an evergreen hedge, but do not like the Spruce for this purpose.

New Brunswick, N. J.

I.

[The Red Cedar, the Hemlock, the Arbor-vitæ and the White Pine can all be used to make a hedge in New Jer-

sey. All these trees grow rapidly and bear cutting. Deciduous shrubs, however, as a rule, make better hedges in this country than Conifers, as they can better support the unnatural conditions to which hedge-plants must be subjected if they are to be kept to formal lines. The common Privet is one of the hardiest and most easily raised plants which can be used for a hedge. The Barberry makes a beautiful hedge, and so do Lilacs, Syringas, Tartarian Honeysuckles and other hardy garden shrubs. A hedge is a formal thing, which is beautiful only when it is uniform and regular and perfect; a hedge in which there are gaps or in which some plants are feeble and sickly is not an attractive object, and had better be cleared away and a new one planted, as it is almost impossible to repair an old hedge by inserting new plants. This is the reason why it is important to use only very hardy and carefully selected plants in making a hedge. It would be impossible, probably, to make a really good hedge under the conditions given by our correspondent. The overhanging trees will inevitably stunt the growth of the plants under them; and the hedge will present, therefore, a broken and unsatisfactory appearance, which cannot fail to be disappointing. An irregularly planted border of hardy shrubs in front of a fence is always better than a stiff, clipped hedge; and when, as in this case, the fence is overshadowed by large trees, an informal plantation is the only one which can be safely used. The common Barberry and some of our native Viburnums and Dogwoods will be found excellent plants to use in this way.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—In passing from woods to prairie here in Minnesota, some points in difference of climate are forced on our notice.

About November 20th, 1886, a foot of snow fell in the woods north of Minneapolis, while on the prairie, fifty miles west, the ground was not well covered.

On April 1st, 1887, in the woods, near Aitken, sleds were running with fair sleighing, and crossing the lakes with heavy teams as in winter; while on the prairie, near Fergus Falls, the seeders were going.

On April 23d, 1888, the dense Tamarack swamps of the Itasca basin held two feet of snow; while on the clearings, 100 yds. away, and on all the ground well exposed to sun and south wind, the ground was bare.

H. B. Ayres.

Recent Publications.

Pen and Pencil in Asia Minor; or notes from the Levant. By William Cochran. New York, Scribner and Welford.

This book, written by an Englishman who is a member of various British Agricultural Societies, is a combination of lively notes of travel with the serious and exhaustive discussion of an industry which the author has long been recommending to the notice of British colonists. Incidentally he gives interesting information with regard to the agricultural and fruit-growing possibilities of Asia Minor, especially as concerns the success which German colonists have had in raising the vine in the neighborhood of Smyrna. But his main object is to point out the possibilities and explain the processes of silk-culture as practiced in the Levant.

A long residence in China some twenty years ago convinced Mr. Cochran that the cultivation of the Tea-plant and of the Silk-worm might profitably be introduced in certain parts of Queen Victoria's dominions; and on his return to England he preached this belief so vigorously in the press and elsewhere, that, largely as a result of his words, Tea-farming was taken up on a great scale in Ceylon and in India. But the general adoption of sericulture in the east has been longer deferred, owing to the diseases which, for many years, had been raging among the silk-worms in China and which threatened the success of fresh enterprises of the sort. A few years ago, however, M. Pasteur devoted himself to examining these maladies and to providing a cure; and his lessons having been put in practice in the Levant, Mr. Cochran spent a season there for the purpose of studying the results. These, as seen in the large establishment near Smyrna of Mr. Griffith—who although an English citizen, has for many years been the consul of the United States—proved to be entirely satisfactory. In his present book Mr. Cochran exhibits this fact in a clear way, and gives full accounts, carefully illustrated, of the whole process

of sericulture as it passed step by step under his eyes. One chapter is devoted to the Mulberry and other trees the leaves of which have been used or experimented with as food for the silk-worm. The White Mulberry—*Morus alba*—always the favorite Silk-worm food in the east, is pronounced to be the best tree for this purpose, although the success in Louisiana with the Osage-orange is recognized; and the manner in which it is propagated and grown are fully explained. The ingenious way in which Mr. Cochran has sandwiched in his instructive chapters among those which record the merely picturesque incidents and sights of his voyage will undoubtedly attract to his book a multitude of readers who would not have cared for a mere technical treatise on sericulture. But simply as a treatise of this sort it well deserves attention from all those who, in various parts of the United States, have recently engaged in the silk-producing industry.

Recent Plant Portraits.

AMARYLLIS CONTESSA MARIANNA CAMBRAY DIGNY, *Bulletino de la R. Societa di Orticultura*, April; a variety with rather dingy red flowers streaked with white.

TEA ROSE, VICONTESSE DE WAUTIER, *Journal des Roses*, April; a handsome pink and very double variety raised by Alexandre Bernaix at Villeurbanne, near Lyons, an offspring of *Madame de Tartas*, fecundated by the pollen of *Anna Olivier*.

DICHORISANDRA PUBESCENS, var. *nov. Talmiensis*, *Revue de l'Horticulture Belge*, April; a handsome blue-flowered variety, the leaves striped with white, which appeared spontaneously in 1885 in the soil of a case of plants imported by the Botanic Garden of Brussels from Brazil.

CORDYLINTE INDIVISA, var. DONCETIANA, *L'illustration Horticole*, March 15th; a variegated variety of Belgian origin, the edges of the leaves marked with yellow.

TASCONIA PARRITE, *L'illustration Horticole*, March 15th. A handsome stove climber from Brazil with large orange flowers.

PRIMULA SINENSIS, var. EDWARD MORREN, *L'illustration Horticole*, March 15th; a variety with pale blue flowers; a novelty in Chinese Primroses.

ADANSONIA GREGORII, *Gardener's Chronicle*, April 28th; the Australian Baobab; one of the largest trees known.

DOUGLASIA LEVIGATA, *Gardener's Chronicle*, April 28th; a pretty little alpine plant of the Primrose family, from the mountains of north-western America. This genus commemorates the botanical labors of David Douglas, a Scotch botanical traveler, who discovered and introduced into cultivation some of the most important trees of Western America.

PHALÆNOPSIS SCHILLERIANA, *Gardener's Chronicle*, April 28th. "From an illustration from a photograph of plants in the collection of Fred. Scholes, Esq., of Brooklyn, who has been called the Partington of America, a compliment that is richly deserved, as our engraving undeniably proves. The two plants here depicted are fair representative examples (one being 3 feet in height), and only three years since were small pieces. Mr. Scholes is very liberal in the use of cow-manure in liquid form when his plants are making active growth. That he has practically demonstrated the efficacy of his treatment is proved by the luxuriance both in foliage and flowers of his *Phalænopsis*, one plant in his collection having no less than fourteen leaves from 8 to 15 inches long, and of remarkable substance. The plant carried three large branching spikes, and when in flower would be a marvel of beauty."

Notes.

Maple sugar was made this year in considerable quantities in California from the sap of the Broad-leaved Maple (*Acer macrophyllum*). The sugar is said to be of excellent flavor.

The annual meeting of the Society of American Florists in this city next August was to have been held in Tammany Hall. The burning of that building has somewhat embarrassed the local committee, but they have now secured the Fifth Avenue Theatre for that purpose.

Utricularia montana.—A splendid example of this showy plant is now flowering in the Orchid Houses occupied by Mr. I. Forstermann, of 50 Storm Ave., Jersey City. The plant mentioned has 26 stout spikes, on which are produced 100 large pure white blossoms of fine substance. This Bladderwort is sometimes classed with the Orchid family, to which genus it has no affinity. Its cultural requirements, however, are very similar, and it is invariably found in Orchid collections, where it thrives vigorously in a warm and very moist situation.

On the first of June Apples from New Zealand were on sale in San Francisco. According to so good an authority as the *Pacific Rural Press*, the fruit was not only shapely and handsomely colored, but firm and well-flavored. Apples from Victoria, are sold in the London market at from 2d. to 6d. each, and as the freight charges from the orchard to the seller are about 1½d. a pound, this leaves a good margin for profit to the grower in the Southern Hemisphere.

Retail Flower Markets.

NEW YORK, June 15th.

The supply of flowers this week has only been fair, but it has been sufficient to meet the demand. The decorations of halls and theatres for Commencement exercises have consisted of a few groups of foliage plants; Graduates' favors have been large loose bunches of flowers, more often than basket designs. Flowers from shrubs seem to grow in demand every year and have never brought as high a price as they now do. Syringa sells for \$1.00 a bunch of 18 large sprays, Weigela for 50 and 75 cts. a bunch. Snowballs are highly esteemed and cost \$1.00 a bunch. Hybrid Roses are smaller, but are of good quality, excepting Baroness Rothschild, which averages poor. All Hybrids cost 40 to 50 cts. each, the latter price holding for those selected. They are \$5.00 a dozen. Moss Roses cost 25 cts. a spray. Clusters of these with a few spikes of Mignonette are in demand for dinner favors. Genl. Jacqueminot Roses are small, but of rich colors, and bring \$1.50 a dozen. Brides, Catherine Mermets, Niphetos and Perles are also \$1.50 a dozen. Fine La France Roses cost \$2.00 a dozen. There are some handsome Orchids (Cattleyas) arriving which cost \$1.00 a flower. Pea blossoms are among the choice flowers added to bouquets and designs to give the last finish. They cost 50 cts. for a cluster of 18. Carnations cost 35 and 40 cts. a dozen. Pæonies range from 10 to 25 cts. each. The pink variety is in the largest request. Heliotrope is 50 cts. a bunch. Mignonette is poor and from 25 to 50 cts. a bunch. Field Daisies are very handsome and 15 cts. a dozen, and wild Buttercups cost 15 cts. a dozen. Gladioluses bring from 20 to 25 cts. a spike. Callas are scarce and 25 cts. each. Pansies cost 25 cts. a dozen. Lily-of-the-Valley is again coming in from green-houses.

PHILADELPHIA, June 15th.

Roses everywhere, and as a result there is a temporary glut in the market. It is only in Roses, however, that the over-supply is noticeable. Many other flowers are scarce, as for example, good Carnations, especially the white varieties. The crimson, scarlet and other colored varieties are fair in quality, and cost 25 cts. a dozen. Sweet Peas are more plentiful, and sell readily at from 25 to 50 cts. a dozen. Lily-of-the-Valley holds its own at \$1 a dozen. Mignonette and Heliotrope costs 25 cts. Hybrid Roses cost from \$2 to \$4 a dozen, according to quality and variety. Amongst out-door Roses there is a greater variety to select from than in the list of forcing sorts. Jean Liabaud and Louis Van Houtte are two favorites; the former is a velvety dark crimson, the latter is somewhat brighter and of very fine form. The dark Roses have not met with much favor in the winter for the past two seasons. American Beauty is still asked for, and sells at from \$3 to \$4 a dozen. Mermets, Bennetts and Brides are from \$1 to \$2 a dozen. Perles and Sunsets, 75 cts. to \$1.50. Bon Silenes and Gontiers are getting thin, and bring 50 cts. a dozen. Water Lilies are 75 cts. per dozen. Field Daisies are plentiful, and sell at 25 cts. a dozen. Single Dahlias, \$1 to \$1.50 a dozen. Cornflowers, 25 cts. a dozen. There is a steady demand for any choice good flower. Indeed, June is a better month for the flower trade than May, for new things like Sweet Peas, Miniature Sunflowers and the yellow Cornflowers keep coming into bloom, and are always salable.

BOSTON, June 15th.

The cut flower market has been heavily overstocked during the past week. Belated crops, intended for Decoration Day, but delayed by cold weather, have been coming in from every direction, and the wholesale dealers have been loaded down with surplus stock. Roses in all varieties, excepting the choice hybrids, are very abundant. Of choice hybrids there are none. Carnations are also very plenty in all the standard varieties, such as Anna Webb, Grace Wilder, Buttercup, Hinze's White, E. G. Hill and Allagatiere. There is still a small supply of Lily-of-the-Valley obtainable from Canada. After this is exhausted the green-house crop will begin to come in again, at increased prices, and will be in market as a regular supply all summer. The roots from which this is produced are kept over from last season in ice-houses, and are thus held in a dormant condition until required. White Gillflowers are abundant, and of best quality, very large and double. The choicer varieties of out-door flowers, such as Rhododendrons, Pæonies, Ghent Azaleas and Clematises, are used extensively in large baskets and decorations, and they help to make the florists' windows bright and attractive. Of Orchids a few *Odontoglossums* and Cattleyas (mainly *C. Mossia*) are in market. The demand for Lilies of all kinds is brisk, but very few are offered. Tea Roses bring 50 cts., but fancy sorts command from \$1 to \$2. Jacqueminots of rather inferior quality are held at \$3, and Hybrids are scarce at \$6. Carnations and Calendulas are 50 cts. a dozen. Stocks and Spiræa, 75 cts. Maidenhair Fern, 50 cts. Smilax, 50 cts. a string. Lilies-of-the-Valley cost \$1 a dozen, and will probably cost twice as much in a few days. Rhododendrons are \$5 a dozen; Ascension Lilies, \$2; Harris' Lilies, \$4, and a few Callas can be had for \$3.

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Hardy Fruit Trees.

IN a recent number of the *Gardeners' Chronicle*, Mr. F. W. Burbidge advocates the introduction of fruits that are hardy in climates like that of the Volga region, where Apples, Cherries and Plums have been grown for a thousand years. He does not claim that these fruits would necessarily flourish in the moister climate of England, but he argues that if crossed with choice varieties of more tender constitution a new race might be hoped for which would have the fine flavor of one parent and the more vigorous habit of the other. The fruit growers in our north-western States have been experimenting in this direction with trees from the great central plain of Europe, where the conditions of climate more nearly resemble their own than do those of western Europe. But aside from this, there is ample encouragement for testing the fruit trees of other countries in the success which has followed the cultivation of the Japanese Persimmon and the Peen-to Peach, for example, in our southern States. No one can predict what advantage might be derived from crossing these with native species or garden varieties that are in cultivation here. Our best Raspberries and Grapes have been bred up from native species or by a mixture of native blood with that of introduced kinds.

The whole subject of improving fruit trees in hardiness by going back to the wild stock, or to forms that have become established by centuries of cultivation, is one that should engage the attention of our experiment stations. The fact that long years of work and study are required before any results are reached is all the more reason for beginning as soon as possible. As to the need of collecting and studying wild plants, Mr. Burbidge says:

In fruit growing, as in gardening generally, there is no standing still. We must either improve or we shall go back, and the best way to improve our native fruits will be to cross-breed with new blood in the shape of hardier kinds, from widely separated habitats and different soils. The Asiatic Grapevine did not succeed in America, but by inter-breeding it with native species a race of Grapes better suited to the cli-

mate has been obtained, and even the French vineyard cultivators have been glad to procure these American varieties to repair the ravages of the phylloxera during recent years.

One of the very best undertakings for our Royal Horticultural Society to undertake just now would be this task of collecting the wild species and cultivated variations of our hardy fruits, other than those now grown in England. It has always seemed to me, and doubtless to others also, a sad waste of time and capital to grow at Chiswick the ordinary kinds of Apples, Plums, Pears, Cherries, Grapes, etc., which are now to be seen in most nurseries and private gardens. The true work and business of a horticulture society is not with the old but with the new, and to be worthy of enlightened support the very fringe of progress must be lifted for us as it was lifted for our predecessors in the days of Lindley and Knight, Fortune, Douglas, Hartweg, and many others one need not name.

In conclusion, I venture to differ altogether from those who say that the days of collecting wild plants is passed or played out, and that the hybridizers can now carry on the work, and supply the collector's place to greater advantage. This view is the subtlest of all errors, viz., half a truth. There is room for the collector now as in the past, for the cultivator always, but the hybridist cannot with safety kick down a ladder on which he stands. The hybridizer may give us a few ephemeral forms of Orchids, Arads, Amaryllids, or florists' flowers, but what can he hope to do with our hardy fruits, vegetables, and grain-yielding grasses, when their wild prototypes are as yet un-introduced to our gardens? Looking broadly at the question, there is as much room for collectors now—more, in fact—than at any other time. The world of hardy flowers, now so popular, is practically untouched, and as I have said of the hardy fruits of northern Asia, we know practically nothing more than the late Karl Koch has told us in his books.

I believe the appointment by the Royal Horticultural Society of a really good collector, would be one of the most profitable investments the Society could make at the present time. Gardening is changing its ground now as it ever has done, and people generally are opening their eyes to the fact that the glass-house culture of a few stove plants or Orchids is a very small part of a great question. Gardening is creeping out into the fields, and every day the demand is greater for the best fruits, vegetables and flowers, that will grow in the open air.

The Sermon of the Flowers.

IF there are sermons in stones, there are more and clearer ones in the living works of nature. Just at this time of the year, for example, there is a lesson to be learned from the flowers which it would be well for us all to lay to heart and consistently put in practice. This is the lesson of free, persistent and painstaking giving.

Few persons are so parsimonious with the products of their gardens that they neglect to share them with their friends when chance suggests or some special occasion prompts. But, even to their friends, few give as persistently or as freely as they might. One is far too apt to think before giving whether his flowers are "good enough," and whether the recipient will "care about them." Such thoughts are as judicious as they are natural when the recipient is equally fortunate with the giver in the matter of gardens and hot-houses; but it is seldom realized how out of place they are when the friend in question can merely look at flowers over some one else's fence in summer and in winter must buy little bunches at big prices from a florist. Winter or summer even the refuse flowers of a rich man's garden would be gladly welcomed by more of his friends than he ventures to believe.

But it is not only to friends that nature bids us give—it is to the stranger, the wayfarer, the beggar. Here again it is too often doubted whether the gift would be really valued. Out in the country, where nature herself gives even to the poorest, perhaps it would not be. But in the city flowers are welcomed by every class as no other gift would be. Men may not always care for them, although almost always they do; but there will be found no exceptions among women and little children. Let a lady offer the flowers from her belt to the tired shop-girl behind the counter and she will carry about with her afterwards a memory of brightened eyes and smiling lips which will more than repay her for the sacrifice. Let her walk with

a bunch in her hands through one of the crowded streets in a poor quarter of the town—every child will clamor for a share of it, every forlorn and weary woman will eye it eagerly. Or let her take it to a hospital and see what pleasure a single blossom will give to a suffering soul. Nature's beautiful belief is indeed the right one—the cases are so rare that they need not be taken into account when a flower is not welcomed, no matter how humble it may be and no matter how devoid of sentiment the eye may seem to be which looks upon it. This is the right belief, and it would be well if we should try to express it as consistently and persistently as nature does.

As consistently and persistently, and, be it repeated, in as painstaking a way. Not merely when she is coaxed and flattered and things are made easy for her does nature give her flowers, but always and everywhere, under the most difficult conditions, with the loveliest patience and the most touching care and pains. This, to us of human-kind, is the greatest hindrance to giving; we do not mind parting with our treasures, but we do mind taking the trouble to dispose of them so that they will benefit others. We should be glad enough if our surplus could go by itself to tenement-house and hospital, but we are too busy or too careless to send it there. We would rather give money, for money can be more easily given. But money will not take the place of flowers, either in themselves or in that accompanying gift which makes half the excellence of their giving. He who gives flowers gives a bit of sentiment and sympathy too, and this is valued by the poor and suffering more than all beside. The very child who takes your blossom in the street takes it with a different smile from the one that greets your penny, for he knows or fancies it is given with a different thought.

In some of our large cities flower-missions have been established with headquarters where flowers may be sent and whence they will be distributed to those who need them most; and such missions ought to exist in every town, however small. But if they do not exist, a little trouble may well be taken to supply their place by individual effort. And we can all at least give freely as the chance may offer—to the child who brings home a parcel or peeps through the garden fence, to the workman plodding at nightfall past our garden to his own dreary home, to the shop-girl, to the poor needlewoman around the corner, to any one and every one whose steps cross our own. The gift cannot be too small to be worth giving—the human being can hardly be too callous to appreciate it or pass it on to some one else who will.

Some Eryngiums.

OUR Eryngiums have the reputation of being a hard genus, but since Mr. Rose and the writer have begun to study them in our work upon the North American Umbelliferae, we discover that the difficulty is not to be laid to the species themselves, but to the great confusion in naming them. Perhaps this is not to be wondered at, when one remembers the scattered condition of our literature regarding them. In the absence of the sharp contrasts which are brought out in a presentation of the species all together, collectors may well have become confused, and their errors have naturally become perpetuated. No genus of Umbellifers seems to have its species more sharply defined than *Eryngium*, and a few remarks about some southern and much confused forms may be helpful to botanists. In *Plante Lindheimeriana* Dr. Gray first unravels a bad tangle of synonymy, and clearly defines certain species which had before been perplexing, and which have been equally confused since. Our common *E. Virginianum* was first referred by Linnæus to his *E. aquaticum* as a variety, but was distinguished as a species and set up under its present name by Lamarck. Michaux then gave to the American forms of Linnæus' *E. aquaticum* the name of *E. yuccæfolium*, and referred to *E.*

aquaticum another plant which Elliott afterward described as *E. Virginianum*, but which was not the plant of Lamarck bearing that name. In *Pl. Lindh.*, 209, therefore, Dr. Gray, recognizing the establishment of *E. yuccæfolium*, Michx., and *E. Virginianum*, Lam., gave to Michaux's *E. aquaticum* and Elliott's *E. Virginianum* the name *E. præaltum*, and also separated from *E. Virginianum* another species which had been confused with it, and called it *E. Ravenellii*. As might be expected, *E. Virginianum*, *E. præaltum* and *E. Ravenellii* have been confused ever since.

E. Virginianum, Lam., is a slender plant, from one to three feet high, with lanceolate leaves, the lower on very long fistulous petioles, bracts as long as the head, bractlets with three spiny cusps (the middle one largest) and prominent, acuminate-cuspidate calyx-lobes, equalling or exceeding the bractlets. The species occurs along the margins of ponds and streams from New Jersey to Florida, and thence to Texas. Mr. Canby sends forms from Delaware, with bracts longer than the heads, but in every other respect they conform to this species.

E. præaltum, Gray, is a very stout plant, from four to six feet high, with radical leaves narrowly oblong (not unlike those of a *Rumex*), often two feet or more long, including the long petioles, bracts two or three times longer than the head, bractlets as in the last and longer than the calyx-lobes. It is found in tide swamps from North Carolina to Georgia. The so-called *E. præaltum* of Florida is another species.

E. Ravenellii, Gray, is slender, from one to three feet high, with linear, elongated, nearly terete (conduplicate) leaves, the lower ones twelve to eighteen inches long, bracts as long as the heads, bractlets with three strong and equal spiny cusps, short, mucronate calyx-lobes, and long, rigid styles. Formerly credited only to the wet Pine-barrens of South Carolina, with Ravenel as collector, it is now found to grow near Apalachicola, Florida, collected by Dr. Chapman. These Florida specimens Dr. Chapman took to be *E. Virginianum*, and it was from these, of course more or less modified by published descriptions, that he drew the characters of the *E. Virginianum* of his Manual.

Crawfordsville, Ind.

John M. Coulter.

Trees and Shrubs for a Trying Climate.

THE word "hardy" as commonly used is a relative term. With the prairie settlers of the north-west it means ability to endure the summer and winter extremes noted briefly in the article "Our Prairie Climate," in the issue of GARDEN AND FOREST for May 30th. Some of the essential characteristics of a truly "Iron-clad" plant here, are these:

(1) The foliage must be as perfect as that of the Duchess Apple, the Gakovska Pear, of *Populus Bolleana*, *Rosa rugosa* or of our native trees and shrubs that do well under cultivation on dry upland prairie. Critical observation under the microscope shows such leaves to be provided with extra rows of palisade cells, and a thick epidermis more or less protected by pubescence.

(2) The trees and plants with foliage adapted to great extremes of atmospheric heat and moisture are also protected by special structure of the outer bark, and all the parts of the flower are stronger; firmer and thicker, than those of plants developed in more equable climates. We may add that even the fruit of the true "Iron-clad" is protected by a thick epidermis and by more or less pubescence.

(3) The "Iron-clad" must be as fixed in its habit of growth as a Currant bush or a Hickory. The tree or shrub which can be lured into late growth by our warm, and often wet, autumns, will certainly be injured by our first norther.

(4) Our occasional warm south winds of winter and early spring will stimulate the tree or shrub from a climate dissimilar to ours into a feeble movement of sap, to be, perhaps, choked within twenty-four hours by zero weather. Our truly hardy tree must hibernate as perfectly as the

Duchess Apple, and I am glad to state that we have many trees and shrubs that are still better organized in this respect.

(5) The tree or shrub that defies our winter extremes, of from thirty to thirty-five degrees below zero, must have its new wood—even in the intercellular spaces—so perfectly stored with starch as to be incapable of being ruptured by freezing. A careful examination of the points of growth of the Silken-leaf Apple and of Bullock's Pippin will exhibit an unexpected difference in cell structure to the amateur in such work.

This too brief outline of the essentials of our hardy tree will naturally give the impression that our list of desirable trees and shrubs for the west must be short. But thanks to a rich natural flora, and direct and indirect introductions from old world climates of plants, not unlike our own, we already have a large and varied list to select from.

Some of the varieties and species which seem worthy of trial over large areas of our country will be noticed freely in another communication.

Ames, Iowa.

J. L. Budd.

Alexander Pope and the Gardener's Art.

IN most men's minds the name of Alexander Pope is a synonym for artificiality in art. There is, of course, a further kind of artificiality than Pope's—the kind which is not art at all. But among genuine artists in verse, he stands as the representative of formality, self-consciousness, rule and measure, of high polish, studied grace and well-balanced, rigorously calculated charm; as the very antithesis of all that is meant by the words natural, spontaneous, free and fresh. Narrowly considered as a poet for his manner of speech, the verdict is a true one. But there was more to Pope than this poetry, and there is more even in his poetry than its form. And it is a disappointment to find that so acute a critic, and so sympathetic a student of the eighteenth century, as Mr. Austin Dobson, fails to make these facts as clear as they ought to be made in his article on the poet, recently published in *Scribner's Magazine*.

It is but fair to say, however, that Mr. Dobson is not alone in his failure. So far as I have read, no biographer of Pope has recognized the service which he rendered the world in a branch of art which was not his own. None of them has explained that to this poet, whom we call the apostle of formality, England is more indebted, perhaps, than to any other single man, for the development of the "natural style" of gardening. Historians of the gardener's art have been more clear-sighted, but the attitude of his professed biographers is typified by that of Dyce, who says, "Though his writings exhibit incidental glimpses of rural nature, he appears to have had no passionate sense of her beauties; he had more pleasure in describing those external objects which are artificial than those which are natural. . . . In his *Windsor Forest*, which gave him an opportunity of presenting to us distinct and peculiar landscapes, his descriptions of scenery are general and without individuality." This is one of those verdicts which are true in the letter, but false in the impression they give. It is true that Pope's *Windsor Forest* shows us no such rural pictures as a modern writer would paint, is peopled with nymphs and dryads, and breathes in general the pseudo-classic spirit of the age; and it is likewise true, as Mr. Dobson says, that it "is cold and conventional to the modern reader." But had Pope really "looked at nature with the unpurged eyes of his generation"—Mr. Dobson's words again—he would hardly have written of *Windsor Forest* at all, and his poem would certainly have lacked those occasional breaths of freshness and that underlying strain of sincere feeling for nature's sincerest self, which even to the modern reader (if he can read a little deeply) redeem its coldness and artificiality of form. So, too, while it is true that

Pope can 'have had no "passionate" feeling for rural nature, we must remember that his life, except in its very early years, was passed in the cockneydom of Queen Anne's reign—in London itself, or beside the villa-ed Thames; and that it was a marked peculiarity then and there to have any feeling for rural nature at all. Again, it is true that, as a rule, he describes artificial, not natural, scenes; but artificial is a word of wide significance, and to accept it in this connection in its most pronounced significance, is wholly to misconceive of Pope. The scenes which he loved best were artificial, in the sense of having been created or altered by art. But they were not artificial in the sense of being formal. And this fact marks him off distinctly from the mass of his contemporaries—gives him a place in history as the apostle of a new art whose tastes and ideals were far ahead of those of his generation. If we study the little plan of his famous garden at Twickenham (published with Mr. Dobson's article), we see that, although some parts are formally designed, there are others in which a natural looking arrangement has been made; and all the descriptions of the place which have come down to us make clear its unlikeness in this respect to the typical garden of the time. Moreover, Pope's titles to honor, as an advocate of natural gardening, do not rest solely on his Twickenham experiment, or on the sentiments implied in his *Windsor Forest*. A paper on *Verdant Sculpture*, which he published early in life in the *Guardian*, is known to have worked a revolution in English practice—to have scotched, if not instantly killed, the practice of clipping trees into formal shapes. Kent, at first a painter, and then the earliest of English landscape gardeners—in the true sense of the word—was deeply influenced by Pope; and the famous Epistle to the Earl of Burlington, *On the Use of Riches*, might serve to-day as a text-book of aphorisms for the landscape gardener's instruction. It seems strange that Mr. Dobson did not dwell upon the passages in this poem which refer to the gardener's art—they would have served him for the establishing of so pretty an antithesis between Pope the formal poet and Pope the advocate of informality in another art. Might one not expect that Versailles would be his ideal, and the long drawn aisle of verdure, the square walled pool, and the marble terrace his synonyms for beauty out-of-doors? No; what he says is:

To plant, to build, whatever you intend,
To rear the column, or the arch to bend,
To swell the terrace, or to sink the grot,
In all, let Nature never be forgot. . . .
He gains all points who pleasingly confounds,
Surprises, varies and conceals the bounds.
Consult the genius of the place in all;
That helps the waters or to rise or fall;
Or helps th' ambitious hill the heavens to scale,
Or scoops in circling theatres the vale;
Calls in the country, catches opening glades;
Joins willing woods, and varies shades from shades;
Now breaks, or now directs, th' intending lines;
Paints as you plant and as you work designs.
Still follow sense, of every art the soul;
Parts answering parts shall slide into a whole,
Spontaneous beauties all around advance,
Start e'en from difficulty, strike from chance. . . .

And when he desires to say what should *not* be done, these are his words:

His gardens next your admiration call;
On every side you look, behold, the wall!
No pleasing intricacies intervene,
No artful wildness to perplex the scene;
Grove nods at grove, each alley has a brother,
And half the platform just reflects the other. . . .

Thus did Pope preach of gardening, and thus, according to his lights and opportunities, he tried to practice it. When Mr. Dobson, in the charming poem which follows the prose article, says of him, that "his Nature" was "a Parterre," the words are used in a metaphorical sense, as illustrative of his literary style; but even thus, it hurts us a

little to read them. It seems a lapse from perfect justice—or, should I say, from perfect taste?—to speak of parterres, even metaphorical, verbal parterres, in connection with the man who did so much to free gardening from the fetters of formality, to “call in the country,” and vary “shade from shade.”

I would not be understood as implying that Pope fought quite alone his crusade against formality in gardening. A hundred years before his time Bacon preached the virtues of a more sympathetic treatment of nature, and Milton sang the charms of a great natural garden. And in his own generation, Addison fought valiantly at his side. But it was only in the century of Addison and Pope that words bore fruit in actual deeds; and it is doubtful whether any single influence was as potent as Pope's in the matter. If we cannot quote the last line of his *Windsor Forest*,

First in these fields I sung the sylvan strains,

and make it apply with literal truth to gardening in England, we can say, at least, that he sang the sylvan strain more convincingly than had any one before him.

A date or two in conclusion may be of interest. Addison's *Description of a Garden in the Natural Style* was published in 1712, Pope's *Verdant Sculpture* in 1713, and his *Epistle to Lord Burlington* in 1731, while the first professional treatise on the natural style of gardening—Whateley's—did not appear until 1770.

M. G. van Rensselaer.

A Well Planted Village Street.

IT is not always that a village street makes a pleasing picture, but the impulse of any artist who might chance for the first time to face the leafy vista from which our illustration (page 209) is taken would be to make a sketch of it. And yet the elements of this picture are of the simplest and most natural character. We can conceive of a street which would be attractive on account of the well planted and well kept lawns on either side, with road borders straight and trim. But here the lawns form no feature of importance, and the problem of how much space shall be devoted to wheelway and foot-path is left to settle itself in the most practical and natural way, as the feet and wheels themselves may dictate. The paths are therefore laid just where they are most convenient, and certainly the flowing curves which mark the boundary between grass and gravel are more beautiful than any straight line could be, while they do not demand the frequent labor of cutting the sod and raking over the road-way, which are necessary when a formal border is neatly kept. The Dandelions in the grass bear witness that the lawn-mower is not used to destroy all the wild flowers, and these in their season add to the natural and rural charm of the street. The brightness of a bit of sky seen beneath the overarching limbs of trees which frame it in always adds a tone of cheerfulness to such a vista, and the sunshine which here sifts through the foliage on either hand forbids any thought of gloominess in the dwellings which a too dense shade invariably suggests. Altogether, this street picture has a balance and harmony which would not probably characterize one composed of various border plantations made in accordance with the individual tastes of different land-owners, and it is, therefore, pleasantly suggestive of a community of interest in the street and its beauty—a suggestion emphasized by the public well which stands for neighborliness and sociability.

It would not be wise nor practicable for any other town or village to imitate this example in detail. But no serious offense against the canons of good taste can be committed where a village street is so planted that it makes a complete picture—a picture as peaceful and natural as the one here presented, and with such unity of motive that no contradictions or incongruities are apparent.

Foreign Correspondence.

Notes on New Orchids.

SOME beautiful novelties in Orchids have been shown during the past week or two at the Royal Horticultural Society's exhibitions. One has excited unusual interest, being a new *Cypripedium*, a genus which is now so fashionable. It is a very near relative of the now well-known *C. Godefroya*, which was introduced a few years ago from Cochin China, and is called *C. bellatulum*.* It appears to be a free bloomer, as the plants exhibited on Tuesday last had several spikes, although they had not been out of the packing-case many days. Messrs. Low, the well-known Orchid importers at Clifton, are the introducers, and it is thought that they have made a hit in importing the plant in such health. All orchidists know and admire *C. Godefroya*, and the new plant being so much superior, it will, without doubt, prove popular.

Disa racemosa (*D. secunda*) was also shown for the first time on Tuesday. It is not a new plant to botanists, having been discovered many years ago in south Africa, but this is the first time it has flowered in cultivation. In growth and foliage it can hardly be distinguished from *Disa grandiflora*—the Flower of the Gods—but in flower it is very different. It has erect spikes rising about eighteen inches high, and on the upper parts of these are loosely arranged the flowers, each being about two inches across; in shape resembling those of *D. grandiflora*, but in color of a deep rose-pink, or, as some describe it, rosy-crimson, a color pleasing to every one and not common among Orchids. The plant is as easily grown as *D. grandiflora*, requiring an atmosphere cool and moist and partial shade. Some fine plants of it are now in flower in the Royal Gardens, Kew, the plants having been collected in south Africa by the assistant curator, Mr. Watson, when traveling in that region. No doubt the enterprising collectors of America will soon have it, as it is already in the trade.

A grand new *Cattleya*, a variety of *C. Mendelli*, was the admiration of all who visited the Exhibition of the Royal Horticultural Society in the Temple Gardens. This *Cattleya* was called *Rothschildiana*, in compliment to the great patron of Orchids. It is impossible to describe the distinguishing points of the flower, but it is one of the largest flowered forms of *C. Mendelli* I have ever seen, with broader sepals and a very ample lip with a lobe almost circular. The color, however, was its greatest charm, being so soft and delicate, the sepals being of one tint, the lip of another, and exquisitely frilled and margined with the deepest tint of all. It came from the St. Albans' Orchid nursery.

A very remarkable Orchid shown also at the Temple exhibition was *Lissochilus giganteus*. Like other species of *Lissochilus*, it is terrestrial, has long, broad, plicate foliage, and a flower stem towering six or eight feet in height, carrying numbers of large and curiously shaped flowers of a rosy-pink color. It is a singularly noble Orchid, but hardly one that everybody would care to cultivate, as such a giant takes up too much room. It was in the superb collection shown by Sir Trevor Lawrence. In that from Baron Schroeder, who owns one of the richest Orchid collections in Europe, were also some very choice things. I single out a few that struck me as worthy of note, and none more so than the snow-white *Ærides Williamsii*, which some say is the albino of *Æ. Fieldingi*, the Fox-brush Orchid. Though not absolutely new, it is so rare that most orchidists, even old, experienced men, had never seen it. A new *Scuticaria* called *Keyseriana*, after the Lord Mayor of London, who visited the exhibition, came from Messrs. Sander & Co. It has affinity with *S. Steelii*, but its flowers are larger, more heavily and richly blotched and barred, and, altogether, it is a finer flower.

*A brief description of this Orchid was given in a late number of this journal.—Ed.

The first Hybrid Epidendrum that is known to have been raised and flowered under cultivation was shown by Messrs. Veitch last Tuesday. It is named *E. O'Brienianum*, after the well-known orchidist, Mr. James O'Brien. This is a cross between the orange-scarlet flowered *E. radicans* (also known as *E. rhizophorum*) and the pink *E. evectum*. The hybrid shows the features of both parents in its flowers, both in form and color, the latter being of a kind of magenta-purple, just the tint, in fact, you would get by mixing vermilion-orange and crimson-lake on a palette. This cross, though not remarkable from the standpoint of beauty, is looked upon as important, as it may lead to really valuable results in the large genus Epidendrum. Two other hybrids were shown by Messrs. Veitch, one of which was said to be a cross between *Anguloa Ruckeri* and *A. Clowesii*. The flowers of the hybrid are like those of *A. eburnea*, being white, copiously freckled with pale red. One would have thought that the yellow of one and the blood-red of the other flower would have produced a cross quite different from the one

species, this plant (See Fig. 38, page 211), when grown, has no produced leaves, the stem leaves being all short, and the lowermost tipped with long, rigid, thread-like appendages which are cruelly barbed. The flower-bracts are not conspicuous, but the flowers, which are comparatively large, are of a light red color, and droop gracefully upon the slender pedicels. S. W.

Plant Notes.

Iris Korolkowi.

THIS is a beautiful new Iris, original in form and outline, showy and strange in colors. It was discovered and imported from Turkestan some twelve years ago and is one of the hardiest of its race. The flowers appear in May, and with the type and one variety, the ground color of falls and standards is a peculiar grayish-white, beautifully netted with olive and coffee-brown streaks; in some other varieties the ground color has a



Main Street, Kingston, Rhode Island.—See page 208.

shown, which was named *A. intermedia*. Another hybrid Orchid was a cross between *Dendrobium Dalhousieanum* and *D. Huttonii*. Here again the result is disappointing, though one could trace the feature of both parents in the flowers of the new comer, which is oppressed with the unpronounceable name of *D. porphyrogastrum*. It is obviously premature to speak of the merits of hybrid Orchids the first season of flowering.

London, May 24th.

W. Goldring.

New or Little Known Plants.

Pitcairnia Palmeri.*

THIS is one of the smallest species of the genus, and was discovered with the one previously figured, by Dr. E. Palmer, growing abundantly in the crevices of rocks in the mountains of Jalisco, Mexico. Unlike the former

*P. PALMERI, Watson, Proc. Am. Acad., xxii. 456. Acaulescent, somewhat furfuraceous throughout, the basal bracts ending in barbed, filiform appendages; leaves of sterile shoots very narrowly linear, entire, sparsely villous; those of the flowering stem bract-like and very narrowly attenuate; floral bracts, narrow, shorter than the reflexed pedicels; petals, light red, 1½ inches long, three times longer than the narrow, acuminate sepals; stamens and style included.

flush of purple and in one variety it is deep purple; the netting of all these is simply deeper in color. It takes to any soil, but prefers a loamy one. It enjoys a long, hard winter and a bright spring.

Max Leichlin.

Baden-Baden.

Calypso borealis.—The flowering season of this little Orchid is just over, and those who have had the pleasure of seeing it in its native habitat may consider themselves fortunate. The peculiar shape of its flower, the variety of delicate colors—pink, purple and white—and the single dark green leaf, make it a favorite among lovers of wild flowers, but to fully appreciate it, one must gather it in its natural home. It usually grows in dark cedar swamps among the largest and oldest Arbor Vitæ trees. Like *Aplectrum hyemale* and *Tipularia discolor*, it sends up its leaf and flower-bud in autumn, and in spring it is ready to start into growth as soon as the snow and frost disappear. Its height is usually three to five inches. After flowering it dies down to the bulb and remains in this until late in autumn. The bulb is quite small and the leaf so inconspicuous, that it is difficult to find the plant except when in flower. Coming so early in the season and being such a rare species, it is seen by only a few. In some portions of northern Vermont it is much more abundant than in the mid-

dle parts, and is quite rare, if it grows at all, in the southern part of the state. For this reason I am inclined to believe that in eastern Canada, where the *Arbor Vita* attains a much larger growth, it is quite common. It grows very abundantly in portions of Oregon and Washington Territory.

F. H. Horsford.

Pentstemon barbatus, Nutt., var. *Wislizeni*, Gray.—“Next in beauty comes the bright-flowered *Pentstemon coccineus*,” continues Engelmann in his report on the collection of Wislizenus; yet he could only judge of its beauty from dried specimens, with colors more or less changed or dimmed in drying, or from the accounts of his friend. Seen growing in its native haunts—near streams of wooded ravines of the Cordilleras—with slender, straight stems two or three feet high, clean, glaucous green leaves, and flowers in color between scarlet and crimson, scattered on filiform pedicels, it is, indeed, a graceful and lovely plant. In recent years Dr. Gray has referred it to *Pentstemon barbatus* of Nuttall, and given it a varietal name to commemorate its adventurous discoverer. C. G. Pringle.

Variations in *Viola pedata*.—There is a hillside near German-town famous for its great abundance of this beautiful flower. When a thousand plants are in full flower, as they were, a few weeks ago, a more charming sight could hardly be desired. While wandering among them I came upon four plants with flowers white as snow, a single plant with a distinct, dark eye, several with very light blue flowers, and others of a color almost identical with that of *Houstonia carulea*.

Joseph Meehan.

Cultural Department.

Poppies.

JUST now Oriental Poppies are in full bloom here and a brilliant display they make. Last year they were in their finest condition between May 26th and June 5th, but this season they, together with most other garden plants, are a week to ten days later in blooming. These Oriental Poppies are hardy, herbaceous perennials of the easiest possible cultivation, and long-lived, and they spread and multiply considerably from underground shoots. They are grown here in a mass several yards square on a warm, dry, sandy bank, where the ground, although naturally poor, is well enriched by surface manuring; the roots can penetrate as deep as they are inclined in the open soil—often four feet or more. Here they flourish and bloom most plentifully. But where the ground is better and the position more sheltered by neighboring shrubs, the Poppies are finer and less apt to be scorched by warm sunshine. When the plants have done blooming they are cut over and *Eschscholtzia Californica* is sown among them; this soon covers the ground and blooms through September and October.

The European Corn Poppy (*Papaver Rhæas*) is easily naturalized on sandy banks and in bulb beds. Here they grow at will and sow themselves. The Hyacinths, Narcissus and Tulips come up and blossom in April and May, and before they are out of bloom the Corn Poppies have covered the ground and begin blooming about the end of May. After their flowering season is over they are cleared away, as they are only annual, the bulbs are lifted, the ground forked over, and the bed planted at once with French Marigolds, Zinnias, Gaillardias, Vincas, Pelargoniums, or some other sun-loving plants. These are removed in October and bulbs are then set out for spring flowering. Seeds enough have fallen from the Poppies upon the ground for next year's crop, and they come up all over the surface like a thick crop of weeds.

Of the large double-flowered annual Poppies known as Ranunculus-flowered and Pæonia-flowered, we have a bed sixteen yards by twelve yards on a warm slope. The seeds were sown early in April, broadcast, raked in and rolled, and a sprinkling of *Eschscholtzia* seed was also sown at the same time along the outer edge of the bed. The *Eschscholtzia* is now in bloom but the Poppies will not flower till the first of July, when they always make a gorgeous blaze. But they do not last long—hardly three weeks. When they are done blooming the ground is cleared and forked and Marigolds or Zinnias are planted for autumn blooming. It is not worth while to wait for these Poppies to sow their own seed, as it costs but a trifle and it is better to clear off the plants before they ripen seed than to delay the next crop.

Such beautiful Poppies as Peacock, Danebrog and Mephisto can be raised from seeds grown in the green-house in March, and they should be grown along in pots till the first of May and then planted out in the garden. Treated in

this way, the Peacock Poppies are now in bloom; the others are not. But these may be sown out-of-doors in spring in the same way as the Pæonia-flowered Poppy, or they may be sown in the fall like Corn Poppies. In both cases they will grow and bloom well.

In a cold-frame the beautiful Alpine Poppies (*P. nudicaule*) have bloomed since April. They are hardy perennials, but the best practice is to treat them as annuals or biennials. They are of dwarf habit, and some are white, others bright yellow, and others orange; and when growing near each other the yellow and orange varieties mix together, and we often get yellow blossoms that are striped with orange and orange blossoms striped with yellow. These are lovely and appropriate plants for the rock-garden and they should be grown where water will not lodge about them, or hot south-west sunshine strike them in summer. If you grow them in the rockery let them naturalize themselves there; this they will soon do, as they scatter their seeds and seedlings come up all about them. Some young plants, raised from seed sown in the green-house last February, and planted out early in May, are now in bloom.

William Falconer.

Glen Cove, N. Y.

Bedding Plants for Spring.—The expensive fashion of “bedding out” is gradually losing favor, especially in England. It survives here perhaps because the number of plants available for summer bedding in this country is considerable, and success is comparatively easy. With spring bedding this is not so. The English system has been generally followed, but the difficulty here is in using the variety of plants used there. Wall-flowers, Aubrietias and *Saponaria Calabrica* cannot be used at all. Hybrid Oxlips wilt, and rapidly fade after the first spell of warm, bright weather. *Arabis albidia* and *Myosotis sylvatica* quickly run to seed, and *Myosotis dissitiflora*, which is a perennial and not an annual, and by far the better kind, is later in flower here because it must make new flowering shoots; those formed the previous fall, and which should flower early the next spring, being invariably killed back to the root-stock during winter. Perhaps seed sown or cuttings taken in August and wintered over in a frame would give early flowers; but I have never seen this tried. *Silene pendula compacta* does well if sown in July or August and kept over in a protected frame; it comes in well, and is charming when planted as a groundwork for yellow Tulips. As a groundwork for scarlet Tulips nothing is more beautiful than a bed of Pansies, especially since the great improvement in the French varieties of these plants. They have also the advantage of being easily and cheaply raised.

In addition to the above named, many-early flowering American plants are useful for spring bedding. It will possibly be regarded as an expensive innovation to suggest a bed of *Trillium grandiflorum*. But the expense would not be greater than the cost of many pieces of summer bedding, while the beauty would be infinitely greater. Why not have a bed of *Viola pedata*, even though the plant is common in some localities? The Dog-tooth Violet would make a handsome spring bed, and could be as easily followed by summer bedding as Tulips, though the same could not be urged in favor of the Trillium. The beautiful varieties of Moss Pinks (*Phlox subulata*) have proved admirable spring bedding plants. The varieties best adapted to this purpose are Nivalis, white; Atropurpurea, purple; Vivid, bright rose; and Model, light rose. It takes considerable time to work up a stock of these, and in order to keep their foliage green they should be protected in winter.

T. D. Hatfield.

Wellesley, Mass.

Primula officinalis.—Several patches of the English Cowslip are now in full bloom on a north hillside. These were planted six years ago and have had no protection whatever other than snow. The soil is a very poor clay loam. Our winters are very severe, the thermometer often registering more than 20° below zero. On the same hillside, though in better soil, are some clumps of *Scilla nutans* (Bluebells), also of *S. campanulata* in var. These have proved to be perfectly hardy and make quite an addition to our early summer flowers. We grow a large number of these Scillas in pots for house decoration, and now that we are sure of their being hardy, shall plant out all our surplus corms. *Narcissus Polyanthus* is hardy here, although they do not flower well, but *N. poeticus*, both double and single, bloom freely, and I have never seen better or larger flowers of the double variety, than those now on the hillside and which have come up through the sod. Jonquils are equally hardy and flower freely. *Erythronium grandiflorum albiflorum* (vide p. 177) is hardy here, having withstood several severe winters, and flowers annually. A small bed of *Iris xiphoides* has wintered well without the

least protection. If this should prove hardy it will be a grand acquisition.

Kenwood, N. Y., June 6th.

F. Goldring.

Spring Beauty.—This pretty little flower (*Claytonia Virginiana*), mentioned on page 177, grows abundantly in some parts of the woods near here. The largest group occurs near the edge of a swamp in a thick wood of Beech, Chestnut, and other trees. The hollow of the swamp is filled with *Symplocarpus foetidus*,

and begins to fade about the first of June. By the middle of June they have withered and disappeared, and without a close search their presence would be unnoticed. They come up, bloom and complete their growth while the woods are moderately open—that is, before the leaves have come upon the trees. In Central Park this plant is naturalized in the grass under the trees on a moist bank. As a garden plant it is of the easiest cultivation and in the rockery it survives year after year. The wild tubers can be gathered and planted in the garden or a stock of plants may be obtained from seed.

Glen Cove, N. Y.

H. F.

Orchid Notes.

Orchids in Bloom.—The collection of De Witt S. Smith, Esq., of Lee, Massachusetts, comprises many choice specimens of this genus now in bloom. Conspicuous among them is a group of *Cypripediums* in splendid health, their broad, stout, green foliage, and large, well-formed blossoms, indicating intelligent treatment. The *Cypripedium* house is a span roof structure, having a centre stage forty feet long by eight feet wide, with side stages of the same length. Amongst the most notable in bloom is a very distinct variety of *C. Lawrenceanum*, the purple lines on the broad dorsal sepals being intermixed with numerous small, dark purple spots. The petals stand boldly outwards, the pouch being very narrow. A magnificent example of *C. Dayanum* named Smith's variety showed a flower twice the size of the common *C. Dayanum*. Another remarkable variety observed is a form of *C. Godefroya*, with broad, round petals, the ground color of which is pure white and the markings of the darkest purple. The foliage of this variety is clear green on the under side, while in the ordinary form it is of a dark chocolate color. *C. niveum* is represented by more than twenty plants in bloom, the stout spikes being unusually tall, and, in many instances, twin-flowered, forming a delightful contrast with its handsome mottled foliage. Mr. Norman, the gardener here, places the plants of the latter species, shortly before blooming, into a little more heat, to enable the spikes to attain a greater length, that the blossoms may be seen to a better advantage. Specimens of *C. grande*, *C. ciliolare*, *C. Dominii*, *C. Warneri*, *C. hirsutissimum*, are in superb condition, together with a very fine variety of *C. barbatum*, the centre of the flower being of a blackish purple and the petals tipped with light chocolate. *C. vernixium*, *C. Dauthieri*, *C. Hookera*, *C. concolor* *Regnierii*, specimens of *C. Morgana*, *C. cardinale*, are growing rapidly here, with a dozen plants of *C. Spicerianum* with fully fifty growths each. The *Cattleyas* are very showy, the flowers being unusually large and high colored. A plant of *C. Mossia* bore nine flowers on three spikes of extraordinary size, each measuring fully ten inches across, with petals four and one-half inches wide, lip three and one-half inches broad, and of a beautiful bright rose color. Large specimens of *C. Mendelii*, *C. Lawrenceana*, *C. Skinneri*, and a well-flowered plant of *Oncidium Jonesianum*, with a branching spike, formed the most attractive group in the *Cattleya* house. A fine group of *Dendrobium Pearcei* was also in flower, its pure white blossoms having remained nearly three months in bloom. Several examples of *Vanda suavis* were looking in excellent health, together with a quantity in bloom of the Butterfly Orchid, *Oncidium Kramerii*.

A. D.

Cattleya Sanderiana.—A magnificent variety of this fine Orchid is in bloom, with a four-flowered spike. The petals measure nine and one-half inches across and are a uniform deep rose. The lip, which is three inches across, is a beautiful magenta purple, which is brightened by the bold, yellow eye-like blotches characteristic of this species. This *Cattleya* is one of the earliest to start into growth, and grows very rapidly, flowering within two months from starting. It requires heat and a liberal supply of water until the bulbs are thoroughly matured, after which it should be taken out of the growing house and rested in a cool airy place; otherwise it will start a second growth which will weaken the plant. This is a somewhat new *Cattleya*, native of Colombia; but this species as well as *C. Imperialis*, are only geographical forms of *C. Gigas*, or, more properly, *C. Warszewiczii*.

Chysis Chelsonii.—This handsome Orchid is now bearing two spikes of 28 flowers. It is a hybrid between *C. lavis* and *C. Limninghei*, in growth resembling the former, but like the majority of artificial hybrids, it is much stronger than either of its parents, and a very free grower. It is an Orchid that objects to have its roots confined in a pot and should be allowed to ramble at will. It must be kept well supplied with water, and when forming its bulbs weak liquid manure may be given nearly every day. It requires strong heat to form large bulbs,



Fig. 38.—*Pitcairnia Palmeri*.—See page 209.

Veratrum viride, and the like, and the moist sides with broad stretches of Dog's-tooth Violet and Spring Beauty. In the wet-fish ground the tubers lie on or at the surface and are merely covered with a layer of fallen forest leaves; further up on the dry ground the tubers are buried in the earth from half an inch to three inches deep. From each tuber—according to its size—one shoot or a bundle of shoots—each containing a pair of opposite leaves and raceme of flowers—is produced. This Spring Beauty appears above ground about the first of May, is in bloom and full growth about the 20th of the same month

and though it should be kept comparatively dry when at rest, a warm house in winter suits it best.

Lælia flammea is a showy and rare hybrid raised from *L. cinnabarina* and *L. Pilcheri*, itself a hybrid. It somewhat resembles the former in growth, and the flowers are much in the way of *L. harpophylla*. Our plants are growing freely with the usual *Cattleya* treatment.

Kenwood, N. Y., June 8th.

F. Goldring.

Notes from the Arnold Arboretum.

FRAGRANT flowered Maples are not common; for this peculiarity, and for the great beauty of its brilliant autumn foliage, the variety of the well known Tartarian Maple which is found in the valley of the Amoor River in Manchuria, is well worth general cultivation. It is the *Acer Ginnala*, or, as M. Maximowicz now considers it, the *Acer Tartaricum* var. *Ginnala*—a small, bushy tree, attaining here a height of 15 to 25 feet, with bright green, smooth and shining, ovate, serrate leaves, incisedly trilobed, the terminal lobe longly acuminate. The yellow, long pediceled, small flowers are deliciously fragrant; they are produced in rather loose erect axillary racemes. The Manchurian plant differs from the typical *Acer Tartaricum* in its thinner and less coriaceous, narrower and more deeply lobed leaves, in which the middle lobe is much longer and narrower. The Manchurian Maple is a perfectly hardy, fast growing plant, whose autumn foliage rivals the Sugar Maple in the splendor of its orange and scarlet tints. It is very easily raised from seed, which has been produced here in great abundance for several years.

The English Hawthorn is not a very satisfactory tree in this climate, where the summer sun is too hot for it, scorching the leaves, which are preyed upon, too, by several species of fungus; so that it is not unusual to see plants almost entirely destitute of foliage by the end of August. The beauty and the abundance of the flowers, however, must compensate to a certain extent for this drawback to the English Hawthorn here, and of the innumerable varieties known in European nurseries, none is more vigorous or more satisfactory than a double-flowered scarlet variety, which originated in England not many years ago, and which is known as Paul's Double Scarlet Thorn. The rather small clusters of bright scarlet flowers are produced in the greatest profusion.

The American Crab Apple, *Pyrus coronaria*, is less frequently seen in gardens than the Japanese and Siberian apples. It is, however, an ornamental tree of very considerable value and beauty, and it has the great merit of coming into flower ten or twelve days after all the other apples have shed their petals. The American Crab Apple is a small bushy tree, twenty or thirty feet high, pretty generally distributed through the Appalachian forests from Ontario to Alabama, although not extending into New England and eastern New York. It has serrate or lobed, ovate, somewhat cordate leaves, and broad cymes of pale pink or rose colored flowers, which are nearly two inches across. The orange fruit, flushed with bright scarlet when fully ripe, is an inch or an inch and a half in diameter; it hangs on long slender stalks, and like the flowers is deliciously fragrant; it is sometimes used for preserving. This tree loaded with fruit in the autumn is hardly less ornamental than at this season of the year.

The earliest of the Spindle-trees (*Euonymus*) to bloom is an east Asian species, *E. alatus*, a widely distributed Japanese and Manchurian plant, remarkable for the wide, corky wings of its branches. It is now covered with small yellow-green flowers in loose, generally three-flowered cymes. The fruit is much less conspicuous than that of many other species of this genus, and its greatest merit is the beauty of the peculiar rose color of its autumn foliage, quite unlike that assumed by any American plant, or by any other Japanese plant in the collection. The peculiar corky formation of the branches, which is hardly developed at all upon one variety here, is also interesting. Varieties differ very considerably, in the time of flowering, and in the number of the flowers in their cymes. *Euonymus alatus* is very hardy here, soon developing into a handsome compact specimen four or five feet high. It is figured by Regel in his "*Flora Ussuriensis*," t. 7. The prostrate form of the Strawberry Bush (*Euonymus Americanus*, var. *obovatus*), is in bloom before the other American species. This is a useful subject for the borders of shrubberies and for other positions where it is desirable to connect the turf with higher plants, or to plant as undergrowth under trees. It is seldom used in gardens, however, although by no means a rare plant in much of the regions south of New York and east of the Mississippi River. It has long trailing branches which root freely, thin, dull, dark green, obovate leaves, erect flower-stems one or

two feet high, small greenish purple flowers and rather conspicuous warty crimson fruit with a scarlet aril.

Rhamnus alnifolius is another dwarf American shrub which, although possessing very considerable merit as an ornamental plant, in its compact habit and handsome foliage, is rarely found in gardens. It is a native of northern swamps, but takes readily to cultivation, soon forming dense, wide-spreading clusters of erect stems, a foot and a half or two feet high, clothed with pale yellow-green, ovate, acute, sharply serrate leaves, with prominent veins. The small yellow flowers and the black fruit are not conspicuous. It is now in flower.

Pyrus (Aronia) arbutifolia, the Chokeberry, is now in flower, and is exceedingly ornamental both in foliage and in flower. There are two distinct forms of this plant, the var. *erythrocarpa*, with narrow leaves, very woolly on the lower side, as well as the cyme, and purple-red or scarlet fruit, which remains upon the branches late into the winter; and the var. *melanocarpa*, which is nearly smooth and produces black fruit. *Pyrus arbutifolia* is a common shrub throughout the eastern part of the Continent from Newfoundland to Louisiana, with slender branching stems two to ten feet high, covered with grayish-brown bark. The leaves are an inch or more long, lance-oblong, oval or obovate, tapering at the base, sharply serrate, pale and often downy on the under side when young, dark green and shining above, the mid-rib glandular along the upper side. The handsome white flowers, often tinged with purple, and with conspicuous purple or brown anthers, are produced in compound downy corymbs; they are nearly an inch across when expanded. Those in the red-fruited variety, which is most common in the South, are considerably smaller and appear here fully a week later. The fruit is a five-celled pome, the size of a blueberry, rather dry, but sweetish to the taste. The common northern smooth forms, with purple or black fruit, vary considerably in the shape of the leaves and in the size and color of the flowers. Some of these forms are exceedingly ornamental when in flower, and the variability which this plant displays naturally, makes it not improbable that, as an ornamental plant, it might be greatly improved through cultivation and selection. I am not aware that its improvement has ever been undertaken systematically; the field is certainly not without promise. Some of the large flowered forms are often found in American nurseries, grafted as standards on tall stems of the Mountain Ash; it is, however, a far handsomer plant if allowed to grow naturally on its own roots, when it forms a tall, upright, and rather compact shrub, which is beautiful from spring to autumn.

Of the two species of *Hudsonia* which are found in the Northern States, the earliest, *H. ericoides*, is now in bloom. It is a bushy, heath-like, dwarf shrub, rarely exceeding six or eight inches in height, covered with slender, awl-shaped, greenish leaves, and producing numerous small, fugacious, showy yellow flowers along the upper part of the branches. This is a very common plant along the sea coast of the New England and Middle States, where it often covers broad stretches of dry, sandy, barren soil, making a conspicuous and beautiful appearance when in flower, and later in the season masses of agreeable gray-green foliage. The *Hudsonias* are not easy plants to establish in cultivation, but once established they grow and spread, especially if they can be slightly protected in winter. They are excellent dwarf rock-garden shrubs, or they can be used as a carpet about taller growing plants.

Neviusia Alabamensis is one of the rarest of North American shrubs, being known only in one locality—the cliffs of the Black Warrior River, in the town of Tuscaloosa, Alabama. The rarity of this plant, the peculiar structure of its flowers, and its relationship, which Professor Gray pointed out long ago, to the eastern Asian genera, *Kerria* and *Rhodotypos*, are sufficient to make its cultivation interesting. The clusters of flowers, moreover, with their long white stamens, are very beautiful, and make this plant a most desirable addition to any garden. The *Nevusia* is a shrub four or five feet high, with erect or spreading branches, short-petioled, membranaceous, ovate, doubly-serrate leaves and solitary or fascicled flowers, which are borne on long, slender peduncles from the extremities of short lateral branches. They have foliaceous calyx-lobes, no petals, and several rows of long stamens, which make the flowers conspicuous and showy. The *Nevusia* is perfectly hardy here, and may be propagated by cuttings as readily as any of the *Spiræas*. It is figured in the sixth volume of the new series of the *Proceedings of the American Academy of Arts and Sciences*, in which will be found a detailed account of this plant and its botanical affinities, from the pen of Professor Gray.

Pyrus fennica, a native of the mountainous parts of central Europe, and by some botanists considered a natural hybrid between *P. intermedia* and *P. Aucuparia*, although reproducing its

characters from seed, is in bloom. It has been described under many names, of which the most common of those still in use are *Sorbus hybrida*, *Azardus pinnatifida*, *Sorbus fennica*, *Pyrus pinnatifida* and *P. sorbifolia*. It is sometimes known in nurseries as *Sorbus quercifolia*. It is a small tree, with smooth yellow-brown bark and erect branches, which attains, under favorable conditions, a height of forty or fifty feet. The leaves are four to six inches long, deeply pinnately cut or almost pinnate at the base, the under side as well as the peduncles and young shoots densely hoary-tomentose. The flowers are creamy white, half an inch across, and borne in wide branching corymbs. The pome is small, rarely more than half an inch in diameter, and dull scarlet in color. *Pyrus fennica* is a plant of very considerable ornamental value; it is very hardy, and grows rapidly, and thus far has not been attacked here by insects; although, like the Mountain Ash, it will doubtless suffer from borers. Specimens differ considerably in the size, and especially in the cutting of the leaves.

Among the White Service trees (*Pyrus Aria*) in the Arboretum by far the handsomest is one received several years ago from the *Arboretum Segrezianum*, under the name of *Pyrus Decaisneana*, a variety probably of the common *P. Aria*, which, however, does not seem to have been described, and which does not differ from the species except in its broader, brighter green leaves. It has broadly ovate, doubly serrate leaves, dark green and shining above, covered on the lower side, as well as the petioles and peduncles, with a dense white tomentum. The White Beam tree and its numerous varieties are rarely seen in American gardens. Many of them are very hardy, however, and possess, as ornamental trees, valuable properties. They are natives of northern and central Europe, the Himalaya and some parts of central Asia. The White Beam is a low, round-headed tree, sometimes twenty to thirty feet in height, and sometimes, especially in northern Europe, a low bush. It forms a compact mass of bright green foliage, with which the white covering of the under sides of the leaves, when the wind stirs them, makes a pleasant contrast. It is handsome when covered with its scarlet fruit; and in winter, too, when its smooth branches and large green buds are exposed. The rather small creamy white flowers produced in branching corymbs are not very showy. The White Beam may be raised from seed; the fine varieties, however, can only be perpetuated by grafting, the Mountain Ash being often used as the stock. Like the Mountain Ash, this tree is liable to be attacked by borers.

Symplocos paniculatus is a hardy ornamental Japanese shrub now in flower. It has attained a height of four or five feet. The branches are stout, erect and covered with light brown slightly scaly bark. The young shoots are hairy pubescent. The leaves are dark green, ovate acute or sometimes slightly obovate, one or two inches long, minutely serrate, conspicuously reticulate-veined, scabrous on the upper side, softly pubescent below, especially along the mid-rib and primary veins. The small white flowers, less than half an inch across when expanded, are produced in short, loose panicles, one or two inches long, terminal upon short lateral leafy branches, which appear in great profusion along the principal stems. The fruit is blue, the size of a pea. The introduction of this very beautiful and interesting addition to our list of hardy shrubs is due to the Messrs. Parsons, of Flushing, who sent it to the Arboretum several years ago.

Among climbing plants none are hardier and few are more vigorous here than *Schizandra (Maximowiczia) Chinensis*, a member of the Magnolia Family, and a native of Manchuria, northern China and Japan, where it is often seen in the forests climbing over trees to a height of twenty or thirty feet. The long flexuous branches are covered with red warty bark. The leaves are two or three inches long, obovate or obovate-elliptical, sharply acuminate, serrate, and slightly pubescent on the under side along the principal veins. The flowers are produced in few flowered axillary fascicles which are completely hidden by the leaves. They are long peduncled, drooping, three-quarters of an inch in diameter, pale rose-colored and deliciously fragrant, and are followed by scarlet baccate fruits, an inch in diameter, and which remain a long time upon the plant. This is a very hardy and fast growing vine, which might be cultivated much more frequently than it is in this country.

Cytisus biflorus, a native of Hungary, is a very hardy shrub here, two to three feet high, with rigid, stout branches, and one of the showiest species of the whole genus, which can be grown in this climate without protection. It has oblong bright yellow parallelly paired flowers an inch and a quarter long, and longer than the small ternate silky leaves. *Cytisus purpureus*, a native of the central European mountain ranges,

is a very hardy and desirable dwarf shrub in this climate. It has procumbent, twiggy stems, solitary axillary, handsome purple flowers, and small, smooth leaves with oblong leaflets. It is sometimes grafted as a standard upon tall stems of the Laburnum, but in this climate it is more successful when grown upon its own roots.

The common Broom of Europe (*Cytisus scoparius*), a tall shrub, five to ten feet high, with small trifoliate leaves and handsome, solitary, axillary yellow flowers, produced in the greatest profusion during several weeks, is unfortunately not quite hardy, but with a slight covering in winter blooms profusely. This is one of the best known and most beautiful of European shrubs. *Cytisus albus*, the beautiful white Spanish Broom, requires also some protection here in winter. It has tall flexuous branches, just now covered with racemed fascicles of pure white flowers, and small silky trifoliate leaves. Like the last, it is well worth the trouble of the slight winter protection necessary to insure its profuse flowers.

The double-flowered form of *Wistaria Chinensis*, in which the stamens are all developed into petals, is rarely seen in flower here. It is one of the plants sent to this country from Japan by Mr. F. Gordon Dexter twenty-five years ago, and afterwards propagated and distributed by Mr. Francis Parkman. It is now in flower probably for the second or third time only in the neighborhood of Boston. The flowers have little beauty in themselves, and as the plant is such a very shy bloomer, its cultivation cannot be recommended.

June 8th.

7.

The Forest.

Dispersion of Seeds and Plants.

SOME time ago Mr. D. Morris, in a contribution to *Nature*, cited numerous instances in which birds had taken an active part in the distribution of seeds and plants. Birds, it is true, from their greater adaptability to rapid and extensive locomotion, are more concerned in this work than other animals, but they are, by no means, alone in scattering seeds. In *Nature* for March 15th Mr. Morris contributes further notes upon this subject, from which we quote:

"It may seem strange, at first sight, to assert that cattle have been the means of distributing the seeds of certain plants from one country to another, but a statement is made by Griesbach* respecting *Pithecolobium Saman* (N.O. Leguminosæ), a large tree native of Tropical America, now naturalized in Jamaica, that the 'seeds were formerly brought over from the continent [of America] by cattle.' This statement has been carefully examined and it is fully borne out by facts. Formerly, Jamaica, like Trinidad at present, was dependent for cattle on Venezuela. The food of the animals during their voyage consisted, amongst other things, of the pulpy legumes of *Pithecolobium Saman*. The seeds being very hard were uninjured by the process of mastication and digestion, and they were dejected by the animals in the pastures, where they germinated and grew up into large trees. In this instance the seeds were carried across the sea a distance of about a thousand miles, and there is no doubt that the cattle were directly concerned in their introduction. Indeed, without them the seeds, even if accidentally introduced amongst the fodder, would not have been placed under such circumstances as would have enabled them to give rise to plants. In the first place, by being passed through the animals the seeds were softened and the period of germination hastened. In the second place, being embedded in the droppings of the animals the seeds had a suitable medium to protect and promote germination; and this medium enabled the young plants to withstand the season of drought which is incidental to almost every tropical country. In this instance we have cattle not only the means of introducing the seeds of a valuable tree, but also involuntarily instrumental in establishing the tree in a new country, and providing shelter, shade and food for their progeny. Those acquainted with the guango or rain tree, as this *Pithecolobium* is locally called, will fully realize its value as a shade and food tree for cattle, and they will also appreciate the singular concurrence of circumstances by means of which such a tree was introduced to a new country by the very animals which required it most.

"It is possible there may be some one who will doubt the possibility of seeds retaining the power of germination after undergoing the processes of mastication and digestion, and especially in the special case of ruminating animals. There

* "Flora, British West India Islands," p. 225.

is, however, very clear evidence on the subject. It is a common occurrence in India to utilize the services of goats to hasten the germination of the seeds of the common *Acacia arabica*, known as the Babul. This tree belongs to the same natural order as the *Pithecolobium*, and grows in the poorest and driest soils of India. The Babul seeds will not germinate readily in the hot weather, and it is the regular habit, in order to save a season, for a person desirous of a crop of seedlings to make a bargain with a herdsman or a neighbor who possesses a flock of goats to quarter them for some days in a small inclosure in which they are fed on Babul leaves and pods. The droppings of the animals contain a certain number of seeds which are uninjured, and these now readily germinate, and give rise to plants the same season. I am informed by Dr. Watt that in India 'several other plants are treated in the same way.' The seeds of the several species of cultivated Guava are hard and do not easily germinate. These, however, are said to germinate more freely and readily when they are picked up in night soil.

"While on this subject I would mention that when at St. Helena in 1883 I expressed some surprise that no attempt was made to utilize 'urban' manure in the neighborhood of Jamestown, when the land was so impoverished and yielded such poor crops. I was met by the fact that if such manure was largely used the land would become over-run with plants of the Prickly Pear, *Opuntia Ficus-indica*, the fruit of which is largely consumed by the inhabitants. There is little doubt that the seeds of this plant, like those of the Guava, and I suspect also species of *Passiflora*, which are swallowed whole, are capable of germination after they have passed through the human body. Another instance occurs to me where the use of manure has been the means of distributing an undesirable plant on cultivated lands. In many tropical countries a grass known as Para, Mauritius, or Scotch Grass, and sometimes as Water Grass (*Panicum barbinode*), has been introduced from Brazil, and highly esteemed for its rapid growth and nourishing properties. It grows well in moist situations on the banks of streams, and even in soils so swampy as to be suitable for nothing else. In such situations it spreads rapidly and yields abundant food for cattle and horses. Nothing, however, could be worse than this grass for cultivated areas, where the land is required to be kept free from weeds, and where crops of Sugar-cane, Coffee, Tea and Cacao are raised. It has been found that where animals are fed on this grass the joints, even after passing through the animals, have been known to grow. Hence the manure, if freshly used, has been the means of establishing the plant over wide areas."

Mr. Morris then cites the Cardoon and common Stork's-bill (*Erodium cicutarium*) as plants which have spread over wide areas in South America through the instrumentality of cattle. In the latter instance the seeds become attached to the legs and bodies of the animals by means of their bearded carpels, and in this way they are carried over wide areas.

He then continues:

"In the Island of Jamaica we have a remarkable instance of the naturalization and wide distribution of an introduced plant in the case of the Indian Mango. In an official report, published in 1885, I stated that to the Mango, possibly more than any tree in the island, is due the reforesting of the denuded areas in the lower hills; and as in consequence of the changes taking place in the climate members of the indigenous flora are unable to maintain their ground, it is fortunate the island possesses, in a vigorous and hardy exotic like the Mango, the means of counteracting the baneful effects of deforestation. It specially affects land thrown out of cultivation, and the sides of roads and streams where its seeds are cast aside by man and animals. It practically reclothes the hills and lower slopes with forest, and it enables the land to recuperate its powers under its abundant shade-giving foliage.* It is strange that in Ceylon, which is so much nearer the home of the species, the Mango does not spread by self-sown seedlings. We cannot say why such anomalies exist. They do exist, however, and offer problems which can only be solved by a closer study of the conditions of plant life, and the interdependence of plants and animals acting and reacting one upon the other.

"The Orange tree was introduced to Jamaica more than a hundred years ago. It is now found practically wild over the settled parts of the island, and the fruit is exported to the value of nearly £50,000 per annum. Up to quite recently very few

trees were planted. Nearly the whole were sown by the agency of frugivorous birds, who carried the seeds from place to place and dropped them in native gardens, Coffee plantations, Sugar estates and Grass lands. In such localities the Orange trees grew and flourished, and now a demand has arisen for the fruit in the United States an important industry has been established, the active agents in which have been birds. The agency of birds in the distribution of the seeds of plants is too large a subject to be discussed at length here. A valuable contribution of facts in this direction has lately been made by Dr. Guppy in his important work on the Solomon Islands. As the most recent addition to our knowledge of what takes place in oceanic islands at the present time, it deserves careful attention. It will suffice only to quote one or two sentences: 'Whilst through the agency of the winds and currents the waves have stocked the islet with its marginal vegetation, the fruit pigeons have been unconsciously stocking its interior with huge trees, that have sprung from the fruits and seeds they have transported in their crops from the neighboring coasts and islets. The soft and often fleshy fruits on which the fruit pigeons subsist belong to numerous species of trees. Some of them are as large even as a hen's egg, as in the case of those of the species of *Canarium* ("Ka-i"), which have a pulpy exterior that is alone digested and retained by the pigeon. Amongst other fruits and trees on which these pigeons subsist, and which they must transport from one locality to another, are those of a species of *Elaeocarpus* ("toa"), a species of Laurel (*Litsea*), a Nutmeg (*Myristica*), an *Achras*, one or more species of *Areca* (Palm), and probably a species (of another Palm) *Kentia*.'

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Referring to the notes on *Ficus aurea*, published in your issue of May 9th, it may be interesting to record the fact that to my personal knowledge this tree is quite common on most of the islands, and that it is occasionally found on the mainland of the west coast of Florida, as far north as Tampa Bay. A specimen, almost equal in size to the famous Key West tree, stands on Sneade's Island, at the mouth of the Manatee River, and there is another on the opposite point (Shaw's Point) almost as large, while specimens with an entire stem-diameter of from two to four feet are not uncommon. It is quite plentifully found on Terra Ceia Island in Tampa Bay, on Anna Maria, Long, Sara Sota, and Casey's Keys, and I remember having seen it often on the Charlotte Harbor keys, the Chockaliska Islands, etc.

Some of the Florida nurserymen have been propagating and selling the plants for the past four years. A quicker and easier method of propagation than from seed, is from cuttings. During the rainy season of our Florida summer, every cutting strikes readily without artificial heat, in one or two weeks. An advantage of *Ficus aurea* when used as a decorative plant, is that it is not such a slow grower as *Ficus elastica*.

The fact that this tree has not been reported before from the west coast is an indication of the botanical exploration still needed in Florida. The impression seems to prevail that the west coast of Florida is uninteresting, and certainly its plants are very imperfectly known. In Chapman's "*Flora of the Southern States*," for instance, three of our most conspicuous species of native Cactus are not mentioned: *Cereus variabilis*, found all along the west coast from Punta Rassa southward, in dense masses and almost impenetrable jungles, the terror of the settler who tries to plant a tomato patch on new ground; it is also found on the east coast, I cannot say how far north. Another *Cereus*, thought by some to be *C. colubrinus*, but which seems to me to be entirely different, and which is found quite frequently along the coast from Tampa Bay, as far, at least, as to Key Largo; and *Opuntia Tuna*, with which our whole coast and ranges of keys fairly bristle; Indian Key especially presents a *chevaux de frise* of this plant which is appalling.

Among our native species of epiphytal Orchids, *Epidendrum rigidum* and *E. bidentatum* have only been recently known to botanists. *Cyrtopodium punctatum* has been found at Caximbas and at Chockaliska on the west coast, as well as at Miami.

Manatee, Fla., May 21st, 1888.

P. W. Reasoner.

[These new stations for Florida plants are interesting, especially as indicating how much field-work must still be done before the plants of the Florida peninsula and their distribution are thoroughly known. Botanizing in southern Florida has always been and

* Annual Report, Public Gardens and Plantations, Jamaica, for the Year 1884, p. 45.

is still attended with great expense and many serious discomforts. Every year, however, adds new species to the Florida flora, and new facts relating to the range of Florida plants, especially of those of West Indian origin. Our correspondent can render a real service to American botany by carefully exploring the west coast from Cedar Keys to Caximbas Bay, which, as he suggests, is, so far as the plants are concerned, the least known part of Florida. This is now one of the best botanical fields in the country in the prospect it offers for new species, or species new to the United States.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—Many years ago a nurseryman in Nebraska had his stock devoured by grasshoppers and failed to pay us. Two years ago last autumn he wrote us that he had a very large stock of Green Ash seedlings that were very fine, and that he would load a car with 250,000 of them in exchange for his note that we had held for over ten years.

The trees were dug early in November, 1885; they were longer than usual in transit. Our books show that we paid the freight November 28th, but as our freight bills are not paid until the latter part of each month, this does not establish the exact date when the plants were received.

Mr. Geo. Ellwanger called on us in June, 1886, and was surprised to see nearly 100,000 of these trees piled up in bundles of 200 trees each, covering a space about eight feet long, six feet wide and about three feet deep in one corner of our frost-proof packing shed. We sent Mr. Ellwanger a bundle from the same lot of trees in the spring of 1887, after they had lain another year undisturbed. This was a greater surprise than ever, and to surprise him even more than last year, we send him another bundle to-day by mail from the same pile, thirty-one months from the time the plants were dug. No earth or other material has touched them during these thirty-one months, except the earth floor and a quantity of forest tree leaves laid over them when they were placed in the packing house in November, 1885.

We send you also a package from the same lot. The wide doors have been left open this cold, backward spring, and I see the buds have started. I have had the doors closed and directed our packer to send you a package from the same pile next May.

Waukegan, Ill.

Robert Douglas.

[The plants have been received from Mr. Douglas. They are in excellent condition; the wood is perfectly fresh and healthy, and the buds are all alive. We do not recall a case of arrested vitality prolonged during so many months.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—When we consider the large number of horticultural magazines, seedsmen's catalogues and other sources of horticultural knowledge, it is difficult to account for the popular misinformation concerning the names of plants, the manner of their propagation and reproduction, their habits and their uses. This ignorance is not by any means confined to the illiterate. Cultivated people in city and country seem ready to believe any absurdity relating to plants, and to accept any name that is given them, as genuine. More surprising still, we find the daily newspapers circulating the most absurd statements, as, for example, we are told in a certain Boston daily that "a horticultural novelty is a Peony which has caught the hue, shape and perfume from a Rose which overshadows it." A leading New York newspaper gravely gives its readers the following information relative to floral fashions: "Pink and yellow are the favorite colors this season, the Bowarria or Paris pink being especially popular." The following item has been going the rounds of about all the papers in the country: "Seedless raisins are obtained by burying the end of the vine in the ground when the Grape is half ripe. This prevents the formation of seed and the full development of the fruit, but it ripens all the same, and has a delicious flavor."

Such nonsense would be laughable if it were not disgraceful. In no other department of a daily newspaper would such ridiculous blundering be tolerated. Each paper has its musical critic who can pick oratorios and operettas to pieces without a slip of the pen. Articles are written on fashions in dress, where the reporter trips through Youghal lace, guipure and appliqué without ever a misstep. The papers would not dare to publish under these heads any such stuff as they do regard horticultural and floral matters.

It would seem that the horticultural and floral interests in this country are large enough now to insist upon greater accuracy when matters of interest to them are reported. There is no good reason why information of this kind should not be as carefully prepared as that relating to dress, music, the drama, or any other department of society news.

If the horticultural press would treat these misstatements and blunders with the prompt ridicule which they deserve, I believe that a much needed reform would soon be effected.

Boston.

William J. Stewart.

To the Editor of GARDEN AND FOREST:

Sir.—If your correspondent who recently wrote of the Norway Spruces in the Central Park would visit Greenwood Cemetery I think he would find new occasion for complaint. All through the cemetery half-dead Spruces injure that effect of successful care and vigorous life which, without them, would be so satisfactory. And if they seem obtrusive in the park, even apart from their unhealthy condition, such is still more the case in the cemetery, where they have been planted in the most inappropriate and inartistic way among groups of fine old native trees. Yet they look worse, perhaps, along the approach to the main entrance. Here a long row to the right of the road lift their thin, spindling, black and decaying forms close in front of some flourishing Silver Maples. As the Maples are there, the Spruces are unnecessary. They are already injuring the growth of the Maples, and the dreariness which they give to the scene is anything but desirable in a cemetery approach.

Brooklyn, June 1st.

Lot-Owner.

Periodical Literature.

The *Book Buyer* for June opens with an article by Miss Edith Thomas called "Pleasant Ways Through Wood and Field," which is worthy of its attractive title. It is a good example of those little "prose poems" with Nature for their subject, to the growing multiplicity of which we have already referred as among the happiest signs that the American people is redeeming itself from the old reproach of being a people without true sentiment, keen appreciation of beauty, or delight in the "unimproved" works of God.

Lippincott's Magazine for May contains a pleasant anonymous article entitled "Among My Weeds," in which the author tells how she turned a "barren bit of earth" on the top of Meridian Hill, near Washington, into a delightful spot, simply by helping Nature to do the work in her own way. The existing "crop of stones" was removed from the surface and piled into heaps and a crop of ruddy Sorrel immediately appeared. Then Raspberry bushes were encouraged to grow along the fences and around the heaps of stones. Wild flowers sprang up and a very little attention brought them to beautiful development. Mullein-stalks grew twelve feet tall and showed unsuspected charms of line and color, and "decent treatment" made of a Pokeberry a bush ten feet in height, "laden with berries that would make at least a barrel of blood-red ink." The writer tells with pardonable pride of the way in which passers-by stopped to admire her "weed garden," and her charming account of it should give comfort and inspiration to those who think they must hire a gardener and exhaust a florist's catalogue if the surroundings of even the simplest country home are to be redeemed from barren nudity. As she truly says, the weeds of one country are often florists' favorites in another; and the lesson of her article will be reinforced if the American reader will glance through the pages of those English trade catalogues where so many of our despised roadside and pondside weeds are recommended as both easy to grow and very beautiful when grown with a little care.

Notes from the Paris Horticultural Exhibition.

ONE of the striking features of the excellent exhibition this year was the tuberous Begonias. M. Robert, of Vésinet, had a wonderful collection of these plants, which have received so much attention in France. The flowers, both single and double, were very large, and the colors were superb, ranging through every shade of red, pink, orange and yellow, as well as the purest white. A group of eleven hybrids of *Begonia Rex* and *B. Diadema* demonstrated in a remarkable way the possibilities with these plants. The collection of Roses was large, embracing about three thousand plants. Among the Tea Roses, Charles Lévêque, Sunset and Marquise de Viviers attracted the most attention, while Captain Christy, among the hybrids, led off, with Madame de

Watteville, Comte de Paris, Gloire de Margottin, American Beauty, Victor Hugo, Duke of Edinburgh, and others following hard after. In the Polyantha Roses, Ma Paquerette and Mignonette were very best. A curious orange-yellow single Rose, Ma Capucine, was among the conspicuous favorites.

The best collection of Orchids was shown by Messrs. Sander & Co., of St. Albans, England, and it won the *Grand Prix d'Honneur*, offered by the President of the Republic, for the finest exhibit.

An excellent collection of Clematis was sent by M. Cristen, of Versailles, of which the following were the best: Paul Avenal, Eugène Delattre and Lady Caroline Nevill, of the purple sorts, and Marie Boisselot and Miss Bateman among the white ones.

The Rhododendrons were in great variety and well grown, while the Azaleas, both *A. mollis* and Ghent varieties, were superb. A collection of Kalmias was only fair. Not as much is made of this plant in France as should be. Especially good were a group of double Petunias, one of Ericas, one of Maidenhair Ferns (*Adiantum*), to which should be added an interesting collection of "Carnivorous Plants" from Messrs. Veitch, of London.

The cut flowers and fruits, with very few exceptions, were not remarkable; but the show of vegetables was excellent, especially the different salad plants and the Asparagus. An odd feature was a quantity of Mushrooms actually growing.

Paris, May 28th, 1888.

H. S. C.

Notes.

According to the *Woman's Journal*, Mrs. Julia Ward Howe was recently presented in Ventura, California, with a Lily stem which bore 134 blossoms.

Dr. M. T. Masters, editor of the *Gardeners' Chronicle*, has been elected a corresponding member of the Institute of France (section of botany) in place of the late Asa Gray.

At the recent meeting of the Association of American Nurserymen, at Detroit, Mr. George A. Sweet, of Dansville, N. Y., was elected President, and Mr. Charles A. Green, of Rochester, Secretary of the Association for the current year.

The *Bulletin* of the *Société d'Acclimatation* in Paris mentions the fact that a large consignment of Oranges from Australia recently arrived in London in good condition. As the seasons are reversed in the Southern Hemisphere, Oranges there produced may supply the European market when the crops of Spain and Algeria have been exhausted, and it is asserted that if packed in sawdust, or enveloped in paper impregnated with an antiseptic preparation, they may be almost indefinitely preserved.

The wife of Monsieur de Nadaillac, a famous French Orchid collector, was a very skillful painter of flowers, and four large volumes, containing water-color pictures from her brush, representing more than 300 species or varieties of Orchids, has recently been presented by Monsieur Delessert to the library of the Museum of Natural History in Paris.

The *Revue Horticole* recently noted the extent to which fruits and vegetables are now being exported from America, and gave as one reason why they can be sold at sufficiently low prices the fact that their cultivation is greatly specialized. In illustration a Celery farm at Kalamazoo, Mich., is cited which covers 2,000 acres of ground, produces each day, during the season of six months, nearly fifty tons of Celery, employs 1,800 workmen, and directly or indirectly supports some 3,500 persons.

The following uncredited item is going the rounds of the horticultural press:

At a recent horticultural meeting flowers were exhibited in a glass filled with water and fitted with a wide and flat stopper. To the stopper the flowers were attached and then carefully introduced into the water in the globe, the stopper completely filling the mouth of the globe and being wide enough to stand safely. By turning the whole arrangement so that it stood on the stopper, the flowers were left completely surrounded by water. The water magnified the flowers and a pleasing optical illusion is the result. Flowers thus immersed will keep twice as long as those in the air.

A German resident of Barcelona recently published the fact that severe attacks of influenza—exactly like those which we call in this country "rose" or "hay colds"—have afflicted the

members of his family year by year in spring, and that he has at last traced them with certainty to pollen dust from the Plane trees which surround his home. A German scientific journal thereupon declares that the evil influence of Plane tree pollen upon the stomach, throat, eyes and ears was a well known fact in antiquity, both Dioskorides and Galen having called attention to it. That German scientific men will acknowledge that an influenza may be produced by pollen dust of any kind will surprise many American travelers; for many must remember their experience with German physicians, who have laughed the idea to scorn, refusing to believe in the periodicity of the attacks from which their foreign patients suffer, or in the potency of the cause to which those patients attribute them.

Retail Flower Markets.

NEW YORK, June 22d.

Business has quieted down among our florists, but it is not yet at the usual summer ebb. The demand from suburban districts is just beginning, for some resorts have opened, and many cottagers are giving lawn parties. Hybrid Roses are all out-door grown, and show general imperfections in flower and foliage. American Beauties are by far the best. A few Baroness Rothschilds come in good shape, but are small. The range in price of hybrids is a long one, as they cost from 15 cts. to 50 cts. each. Selected ones hold at \$6.00 a dozen. Marechal Neils, Brides and Mermets bring \$1.50 a dozen. The latter are small and pale. Perles, Niphotos and Souvenir d'un Ami are \$1.00 a dozen. Gen. Jacqueminot Roses are decidedly poor and are \$1.00 a dozen. Fine La France Roses bring \$3.00 a dozen. Pæonies cost 15 cts. each. White ones are in good demand. Gladioluses are \$1.50 a dozen spikes. Callas are scarce and cost \$3.00 a dozen, the same as *Lilium longiflorum*. Fancy Carnations with long stems cost 50 cts. a dozen. Garfields and Heintz's White sell for 35 cts. a dozen. Mignonette costs 50 cts. a dozen, and Lily-of-the-Valley 75 cts. Field Daisies are 25 cts. and Pansies 35 cts. a dozen. Sweet Pea blossoms cost 35 cts. a dozen. These with Moss Roses, which are down to \$2.00 a dozen, are the choicest flowers in stock. Sweet Alyssum, finely grown, is sold for 35 cts. a dozen sprigs. Smilax, which looks thin and sickly, is 30 cts. a string. There is some demand for Rose Geranium foliage, which is sold for 25 cts. a bunch.

PHILADELPHIA, June 22d.

Trade is now very dull. What flowers are sold are disposed of in the morning. First-class flowers are very scarce. The hot, dry weather is very severe on them, both under glass and out-of-doors. Stephanotis is quite plentiful, but is used only in designs, or as boutonnières, for which latter purpose they sell at from 15 cts. to 25 cts. per spray. Out-door Roses are nearly over. American Beauty, grown under glass, sells at \$3 per dozen; La France, Mermets and Brides, \$1.50; Perles, Sunsets, Niphotos, Mad. Cuisin and Bennetts, \$1. Water Lilies are 10 cts. per bunch of three flowers. Sweet Peas, Corn-flowers, Nigella (Love-in-a-Mist), and Forget-me-not, 25 cts. per dozen. Pæonies cost from 10 cts. to 25 cts. each. Carnations, Crimson King, Buttercup, Grace Wilder and the scarlet varieties, are 25 cts. per dozen. Gardenias are 25 cts. per flower. Field Daisies, 25 cts. per dozen. Single Dahlias, \$1 per dozen. *Lilium Candidum*, \$1.50 per dozen. Gladiolus, 15 to 20 cts. per spike. Smilax, 50 cts. per string. Asparagus, 75 cts. Adiantum fronds, 35 cts. per doz. Candytuff and the double white Feverfew (*Pyrethrum*) is largely used in *set* pieces; so also is Spiræa and the white Snowball; these are rarely sold alone.

BOSTON, June 22d.

Out-door Jacqueminots are coming in freely, and are unusually full and good, with bright, clean foliage. They cost \$1.00 and \$1.50 per dozen. Hybrids are not in yet, but a few warm days will bring them on in full blast. White Roses are very scarce and have been in great demand for weddings. Cooks and Brides are worth \$2.00 to \$3.00 per dozen, and good ones are hard to find. Good Niphotos are also scarce, at \$1.00 per dozen. The annual school and seminary graduations always make June a busy month for the florists, as the custom of sending baskets and bouquets of flowers to the graduates has become very general. Mermets, Bon Silenes, La France and other pink Roses are very abundant and are worth 75 cts. to \$1.00 per doz. Yellow Roses, such as Perle and Marechal Neil, are not so plentiful, costing from \$1.00 to \$1.50 per dozen. Carnations are greatly overstocked and can be bought in any and all colors for 25 cts. per dozen. Pæonies, Irises, Syringas and other out-door hardy flowers help to make the florists' windows attractive. Among the prettiest blossoms now seen are the bright yellow Coreopsis blooms. These bring 50 cts. per dozen. The first lot of pink Pond Lilies has just come, and these can be had continuously for the next two months; \$3.00 per dozen is the ruling price. Lily-of-the-Valley of the best quality is \$1.50 per dozen. Some of the florists are making a specialty of the Sprays of Allemanda with its bright yellow flowers, and Bougainvillea with bright pink clusters. These vines make beautiful table decorations. They are worth \$5.00 per dozen sprays. Cattleyas cost \$1.00 per flower. These are about all the really choice varieties offered. Mignonette, Marguerites, Stocks, Pansies, etc., are of poor quality and cheap.

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Prospect Park.

PROSPECT PARK, in the City of Brooklyn, is one of the great artistic creations of modern times. It is the best expression of the creative powers of masters in the art of landscape-making, who, more fortunate here than elsewhere in features of natural beauty, and especially in a native growth of majestic trees, were able to produce an urban park unsurpassed in any part of the world in the breadth and repose of its rural beauty.

The condition of this great work of art, which, under the most favorable circumstances, could not attain its full beauty and usefulness for another century at least, is, in some respects, deplorable; and if we can judge by the contents of the twenty-seventh report of the Brooklyn Park Department, the ideas held by the Board of Park Commissioners with regard to the responsibilities of their office, are not calculated to inspire confidence in its future.

The plantations in many parts of the park, were made with a view to results that could only be obtained by a gradual and discriminating thinning-out of many trees and shrubs originally planted thickly. This has for years been shamefully neglected. The Commissioners have at last been impressed, however, by the immediate results of this neglect, and have determined to make up for the neglect of their predecessors. Their report gives no sign, however, that they have proceeded with any understanding of the original motives of the plantations, that they have desired to understand them, or have given them any consideration. All they say of their doings, at least, indicates the contrary.

Let us consider what they are likely to accomplish. An urban park is useful in proportion as it is rural. The real, the only reason why a great park should be made, is to bring the country into the town, and make it possible for the inhabitants of crowded cities to enjoy the calm and restfulness which only a rural landscape and rural surroundings can give. This is why a large park is better than many smaller ones, and why all other objects must,

in a great park, be subordinated to the one central, controlling idea of rural repose, which space alone can give. A park is useful as a playground, or as a breathing space in a city, or as a picnic ground; it may be made interesting by the plants which it contains, or by the equipages which throng its drives; but its real object, its highest claim, to take rank among the best productions of modern civilization, is found in the rest of spirit it can bring to the souls of the weary dwellers in cities. It was with this feeling and with this understanding of what a park should be, that Prospect Park was designed and executed, and anything which is done to lessen its usefulness in this direction is a calamity which persons who only look upon a park as a good place in which to play ball, or drive a fast horse, do not readily appreciate.

To the expression of rural repose in a park, three things are supremely necessary; first, a considerable extent of actual space of natural landscape; second, indefiniteness or mystery of the outlines of the actual landscape space, obtained by curtaining off with natural bodies of foliage such outside objects as the eye would otherwise rest upon; third, by subordinating necessary artificial objects within the park so far as practicable to its natural elements.

The easiest way to destroy the rural character of a park and limit its apparent extent is to open its borders so that outside objects can be seen from within. There is danger that the Prospect Park Commissioners, in their unadvised cutting, will do this. The thinning-out of plantations like those in Prospect Park, where so much depends upon unity of expression and harmony in composition, is a matter of such delicacy that it cannot safely be entrusted to any one but an expert trained in the consideration of the necessities of similar cases. If the Commissioners appreciate the responsibilities which they have assumed in taking charge of such a creation as this park, they will inaugurate a systematic thinning of the plantations under some competent authority, and not trust their own inspirations.

Particular attention was given in the design for Prospect Park, to providing proper accommodation for the enjoyment of out-door concerts. The principal artificial feature of the Park, is the noble lake; in this lake and close to the most picturesque part of the shore a little island was made to serve as a music-stand, while on the adjacent shore a wide and beautifully planted promenade, unsurpassed in extent and completeness of arrangement, was to offer to pedestrians every opportunity to listen to the music, which the occupants of carriages might hear equally well from two large gravel concourses, specially designed for this purpose. The most costly work upon the park was used in the decoration of these arrangements. Extensive refreshment-houses, fountains, seats, broad flights of stairs, superb terrace-walls of sculptured stone with bronze ornaments—all were designed as parts of one scheme embodying the purpose of assembling great bodies of people, within hearing distance of a central point. The outlines of the lake for a long distance were determined with reference to this purpose, bridges were planned, and boat-landings and approaches from all directions laid out with reference to it. The expenditure for the purpose must have amounted to several hundred thousand dollars. The designed use of the arrangement was delayed until the trees planted for shade should have grown to serve their purpose. Now that they have done so, the Commissioners state that they have satisfied themselves, by an experiment, that the acoustic effect of the music from the point intended would be a failure. There are few questions more difficult and with regard to which ordinary architects and ordinary musicians are more in doubt, than that of the minor conditions by which the effect of music is heightened or marred. What recognized master in the science of acoustics the Commissioners employed, what variety of experiments were made, to what extent they were carried, and upon the verdict of what jury of experts their decision was reached, is not to be learned from their report. The

conclusion announced is simply that the scheme, the required outlay for which had been almost entirely made before that time, has been abandoned; and that the Commissioners have built a permanent music-stand under the shadow of a trimmed-up old natural wood, in a part of the park to which the original design provided no suitable approaches, having in view the maintenance of the secluded sylvan character which it originally possessed. The construction which the Commissioners have here erected combines, they state, the purpose of a storage house, of a music-stand, and of a battle-monument, the latter being realized by giving its basement the semblance of a fortification.

The noble plaza outside the principal entrance of the park is described by the Commissioners in their report as a "great failure, suggestive of Siberia in winter and Sahara in summer," and it is suggested to convert it into a garden after the fashion of the Public Garden in Boston. It is evident that the Commissioners do not understand the motives which led to the creation of the plaza, which is really one of the great features of the park, and which provides, among other things, a proper place in which great public meetings can be held outside the park itself. To those who have seen the effects of public meetings upon the London parks, the establishment of this broad paved plaza will seem a wise provision indeed. It greatly facilitates, too, the entrance of carriages into the park as the currents of street traffic approach here upon lines coming from six different directions, which without the plaza would create hopeless confusion.

But it is not necessary to cite other examples of the mental condition of these Park Commissioners as displayed in this remarkable report.

Enough has already been said to show how great the danger is which constantly threatens not only Prospect Park, but all our public parks, and how great is the necessity that the people who inhabit our cities should fully appreciate and understand the real objects for which parks are created. Until the public is educated in all that relates to parks, and until its interest in them can be stimulated and maintained, it seems impossible for an artist to make a design for a public ground, with any hope that his plan will be realized. Let the motives of such a design be studied and adapted with the greatest care; let them be elaborately discussed and illustrated and explained; even if the public approves and endorses them for years and millions are expended in putting them into execution, the time will come, as it has now come in Brooklyn, when a body of men, with no higher claims upon the confidence of the public than their predecessors, will enter upon their duties, either in utter ignorance of what those duties really mean, or with the purpose of ignoring the original motives which governed the construction of their trust, and of seeking for excuses to build a new park upon its ruins. This is a matter of more than local significance and importance. Every park in this country, great and small, has suffered from the causes which are now threatening Prospect Park, and every park must inevitably suffer from the same causes, until public interest and public intelligence is so educated in these matters that the prevalent conception of the responsibilities of Park Commissioners shall be much more serious and enlightened than it is at the present time.

The Artistic Aspect of Trees. I.—Form.

MANY persons profess themselves lovers of trees and find much real delight in shadowy forests, varied plantations, and well-developed isolated specimens. Yet most of them would be surprised if they were asked whether they had ever studied the aspect of trees from the artistic standpoint, and very few give proof that they have held this standpoint even unconsciously to themselves. Nevertheless it is only by studying trees, whether con-

sciously or unconsciously, from the artistic point of view, that we can arrive at a realization of the peculiar character and beauty of one species as contrasted with others, or of the individuals of a single species when seen under different conditions. Only thus can we learn really to appreciate trees, though science may teach us how to understand them; and only when we really appreciate them can we thoroughly enjoy them or use them to the best advantage.

From the artistic point of view trees have three characteristics which may be separately considered—form, texture and color. It is of form only that we shall speak just now.

The first element in the form of a tree is its general outline, its contour, the silhouette it makes when relieved against the sky or against masses of trees of other kinds. The outline peculiar to a given species may vary a good deal, of course, in different individuals; but in all full-grown and well-grown individuals it will be so nearly the same that the typical shape of the species may often be expressed in a very simple diagram on paper. An isosceles triangle with a broad base, for instance, gives the typical outline of the Spruce; a similar figure, but with swelling sides, gives that of a freely developed Hemlock; the White Elm would fill a vase-like figure supported by a straight line for the stem, the Hickory an elongated oval, the Sugar Maple a much fuller oval, the White Birch a very long and slender oval, and the Oak a figure approaching more nearly to a circle. In other cases the form of the head is more irregular, as with the Silver Maple, for instance, the typical shape of which would require to be expressed in a diagram of broken outline. But even in such cases this shape may be easily imprinted upon the memory, and, once imprinted, the pleasure of looking upon a new specimen of the tree is greatly increased by one's knowledge of how nearly it coincides with, or how far it departs from, the typical form of the species to which it belongs.

But a tree's general outline is by no means the only thing which determines what an artist would call its form. Its structure is almost of more importance than its outline in determining this, as within comparatively narrow limits its structure does not vary, while its outline may be greatly affected by a hundred accidents of position and experience. The branches of a tree may droop as in the Spruce, or spread at right angles as in the Cedar of Lebanon, or sharply ascend as in the Lombardy Poplar, or weep as in the White Elm; and between these extremes almost as many variations in branch-direction will be found as there are kinds of trees to examine. Each variation gives a tree a different form, the peculiarities of which are increased, of course, by such other facts of structure as the greater or less number of branches giving greater or less density and uniformity of surface to the head. And each of these differences of form means a difference in the expression of a tree—a difference in the character of its beauty, and, therefore, of its appropriateness to a given situation. A tree of regular, formal outline has beauty of a sort wholly unlike that of a tree with an irregular, broken outline; and the same is true when we contrast one that has many main branches dividing again into many minor ones, and, therefore, a dense, compact head, with one that has fewer branches and a more open and broken surface.

The average size to which the trees of a given species are apt to grow is, of course, another element to be considered in studying tree-forms. This is so obvious a characteristic that even the least artistic eye will note it, the most thoughtless planter will take it somewhat into account. But if we may judge by the results we see all around us in places where an intelligent landscape gardener has not been employed, few persons pay any attention to other characteristics of form. As an English writer said not long ago, it is lamentable to see how even the most enthusiastic amateur lovers of trees ignore those considerations which are "the commonplaces of the landscape gardener." Mere chance or at most a thoughtless,

abstract preference for some kind of tree seems much more often to have determined planting than a clear realization of intrinsic characters accompanied by reflection with regard to the appropriateness of one character or another to a special spot. We have known a would-be planter to ask for Elms, and yet not know whether he wanted American White Elms, which would grow up into vase-like, drooping forms, or English Elms, which would assume shapes almost identical with the shapes of Oaks. If a single tree is wanted in a conspicuous position a Sugar Maple is chosen, perhaps, because Sugar Maples are known to be "good trees," although it would be less well in place with its roundish head than a Hickory with its taller, narrower shape, or a Hemlock, sweeping the grass with its branches. It is the same when trees are set in masses—little thought is given to the way in which their forms will contrast one with the other, and a distressing confusion results where pendulous Birches, spiry-topped Spruces, round and solid Horse-Chestnuts and straggling Silver Maples work in concord only in a single way—each to prevent the others from appearing well and to deprive the plantation as a whole of unity, grace and effective expression.

But even when facts of outline are borne in mind, facts of structure are constantly forgotten. Yet these are of particular importance when a tree is placed in isolation. Almost any kind of contour is agreeable in an isolated tree, but in certain situations it makes a vast difference whether the eye rests upon an almost unbroken surface, like that presented by the Horse-Chestnut until it has reached a great age, or upon a surface which an artist would call boldly and effectively "modeled"—a surface diversified by those alternations of light and shadow which give variety of form within the limits of the general contour.

Of course no rules can be laid down in writing with regard to the employment of trees of various forms. The only way to use them well is to know them well; and the only way to know them well is to study them long and carefully. With scarcely a possible exception to be found, nature plants her trees with an artistic eye; and by studying her methods we may learn how to form our own. From the methods of intelligent men we may also, of course, often learn the same lesson, while from those of the less intelligent, we may gain, if we examine them in the right way, at least the knowledge what not to do. Taste is the guide we need to help us, and taste means the cultivation of our own perceptive powers, not the learning of cut-and-dried æsthetic formulas.

A movement has been started to induce the Canadian Government to establish a forest-preserve about the headwaters of the Muskoka River, which flows into Lake Huron, and of several of the important streams which feed the Ottawa, and which rise in the same region, Island Lake, the head of the Muskoka, being not more than half a mile distant from Otter Slide Lake, from which springs the Petewawa, a feeder of the Ottawa. This is a picturesque and well-wooded country, abounding in lakes and streams and swamps, and still frequented by game and game-fish; it is, moreover, one of the most important in Ontario as a natural reservoir. The proposed reservation embraces a territory of 330,000 acres, exclusive of an area of about 60,000 acres more of water. What the promoters of this scheme desire is that the government should create a public forest and define its boundaries; and appoint a forester and assistants to take charge of it; and cut the timber as soon as ripe under proper rules and regulations. There can be no doubt that the preservation of a great forest area at the headwaters of such important streams would be an immensely advantageous and profitable investment for the Canadian Government, not only in the influence it would exert upon the water supply, but in increased and permanent lumber crops, which good man-

agement would insure. This is a matter which should appeal to all Canadians interested in the development of their country, and one which the people of the United States will watch with interest, as an example of what must be attempted in this country if our forests and streams are to escape the extermination which now threatens them on every side. It is proposed that the Ontario Reserve shall be known as the Algonkin Forest.

Foreign Correspondence.

London Letter.

The wealth of hardy tree and shrub bloom this season is marvelous, and as we are always seeking for causes in gardening we are inclined to attribute the profuse flower crop to the long period of hot and dry weather last summer, which naturally tended to ripen thoroughly the growth of open air vegetation. The charm of beauty of a richly planted English garden at this time of the year could not probably be rivaled in any other country, our moist climate being so exactly suited to the majority of trees and shrubs from temperate climes. A walk through the gardens at Kew just now, which contain representatives of nearly every known hardy tree and shrub, is a great pleasure. There you see more clearly now than at any other season the wealth of exotic growth from every temperate country. You see how largely we are indebted to the floras of China and Japan, of Chili and of other regions of South America, of Central Asia, and of southern and central Europe. But from no country have our gardens derived so much of their open air beauty as from the vast North American continent, which we might say has supplied us with fully two-thirds of our ornamental trees and shrubs. The list I jotted down at Kew a day or two ago of showy flowering trees and shrubs from North America would alone make beautiful a large garden. Its range of color, of size and habit of growth is so wide that one might plant an exclusively American garden in a most artistic way. The term American garden in England has long been a misnomer. It is commonly supposed that the comparatively few members of the Heath family, the genera *Azalea*, *Rhododendron*, *Kalmia*, *Ledum*, *Andromeda* and the rest of peat-loving plants, comprised all that is worth planting of American shrubs. Happily, however, Kew is showing the public by good culture many others that deserve higher popularity, and our nurserymen are growing wise and propagate the best things largely so as to render them easily obtainable. I note a few of the North American shrubs now in bloom, which are undeservedly neglected by landscape gardeners and other planters in England.

There is not a lovelier shrub than the Rocky Mountain Bramble (*Robus deliciosus*), and of late years it has proved itself perfectly hardy, though for a long time only grown against walls. It makes wide spreading bushes which now are lit up by a profusion of great saucer-shaped flowers of snowy whiteness like single Roses. The large nurseries are now getting good stocks of it. *Pyrus coronaria*, though such an old introduction, is rarely seen, though for the beauty of its flowers it has few rivals among ornamental Pears and Apples. Its profuse crop of large rose-colored, semi-double blossoms, deliciously fragrant, render it in bloom one of the finest of lawn trees. The new *Neviusia Alabamensis* is flowering abundantly against a warm wall at Kew. Though not a particularly showy shrub, it is elegant in bloom, the flowers being in tufted feathery clusters of a pale yellowish green. The Californian *Ribes speciosum*, called here the Fuchsia-flowered Currant, is a very beautiful shrub, particularly as a wall covering, though quite hardy enough as an open air bush. There is no *Ribes* like it that I know and the blossoms look uncommonly like those of some of the old Fuchsias. Very charming in many an English garden now is *Choisya ternata*, called the Mexican Orange Flower, the

blossom being so much like that of the Orange, though it lacks the perfume. It is not thoroughly hardy, but as a wall shrub is excellent, the more so because evergreen.

The Snowdrop tree (*Halesia tetrapera*) flowers timidly at Kew, but this is, I think, because the dry, sandy soil does not suit it. I imagine it would do better planted near the edge of a lake or stream in the same position as one would plant a Catalpa or Deciduous Cypress. It is extremely pretty in bloom, the name Snowdrop tree being most appropriate. One of the Viburnums (*V. prunifolium*), called, I think, Black Haw by Gray, is a showy shrub at Kew, the large, white flower-clusters being like that of *Laurestinus*. I consider it a good ornamental shrub. The American Judas tree (*Cercis Canadensis*) is poor compared with the European Judas tree (*C. Siliquastrum*), so that I will not attempt to extol its merits. *C. Chinensis* is also flowering side by side with the other two, but it is likewise inferior. The common Judas tree is one of the prettiest spring flowering trees we have, being now literally smothered with brisk bloom. Other American trees that help to make our lawns and shrubberies beautiful now are the Red Buckeye (*Æsculus rubicunda*), the Amelanchier, some of the Thorns (*Crataegus*), *Magnolia acuminata* and *M. Fraseri*, the latter being scarcely inferior to the noble *M. grandiflora* of the southern States. The glorious race of Hybrid Azaleas and Rhododendrons are scarcely at their best, being fully three weeks behind their usual date of flowering this year.

W. Goldring.

London, June 1st.

The New York Flower Mission.

THE eighteen years' work of the Flower Mission has demonstrated to those interested the usefulness of flowers among the sick, poor and degraded.

The New York Flower Mission was established three months after the one in Boston, which was founded by members of the congregation of Rev. Mr. Hays, in 1870. A Flower Mission in San Francisco, California, has been in operation several years, organized on plans sent from the New York Mission. Americans living in Japan, who were interested in the work here, have one in successful operation there. And now children of the Tokio Flower Mission, the children of high-class Japanese officials, in company with their little American and European cousins, go out to distribute among hospital patients the flowers that have a healing influence.

The mission was originally established to distribute flowers among the hospitals, but soon there were requests for nosegays from the Homes for the Aged, the Insane Asylums and from the sick and poor in tenements. And now nurses, bible-readers and all sorts of missionaries call at the Mission rooms for a basket of bouquets to give out at the dispensaries, or to carry to those in distress.

Flowers come in from all directions within a radius of a hundred miles of the city. They come from private gardens, from Sabbath-school societies, from guilds, and King's Daughters. They are carefully assorted and packed, and are brought free of cost by express companies. The room of the Mission is furnished by All Souls' Church, and the total expenses last season of the New York flower mission from May until November was but \$30.

The distribution of flowers takes place on Mondays and Thursdays, when the flower girls are anxiously awaited at the institutions and places where they are expected. There is an endeavor made to please the fancies of those in confinement by selecting for them flowers for which they have a preference. The blind choose the blossoms that are strongly perfumed, such as Lilacs, Tuberoses and Honeysuckles. Colored people prefer the gaudiest flowers, while children beg for wild flowers, fruit blossoms, Field Daisies and Sweet Clover.

Germans make requests for Geraniums, which they propagate; Peonies, Tradescantias and Ivy; strawberry boxes filled with growing Ferns give great delight to persons of this nationality, as do Pfingster blossoms. The French ask for Violets, Pansies and Mignonette.

Men have their share of the flowers taken to hospital patients. They are received by them with the same eagerness shown by women. Flowers are particularly requested when important operations are to take place, as they are known to give fortitude and hope. Their influence upon the insane has been so soothing, that the keepers of the

mad-house on Blackwell's Island made especial request last season that their annex for the raving patients should receive flowers as often as possible. Insane men were formerly neglected, but this year a particular request has been made that flowers be sent to them as well as to the women.

It has in many instances been shown, when slips and plants have been given to the poor in tenements, that they have awakened an interest and given healthful occupation to some intemperate member of the family, who has in this way been diverted from drink, and it appears that the love for flowers is a strong remedial force when mind or body is weakened or diseased.

The officers of the mission propose to extend their work through the winter season if they can enlist the aid of florists, to supply them with growing plants during the time when the cut flower distribution would be impracticable. They would give out cuttings and small plants from depots established in localities where the poorest people live. They would give printed instructions how to treat the plants and offer a prize for the best results with these plants in the spring. The wholesome effect of plant-culture, it is hoped, might work a beneficent influence in the homes of the vicious. It is proposed to give an exhibition for the benefit of the mission of the plants presented by it and grown in humble homes. In time this project will undoubtedly be carried out.

It has been observed that the poor Germans who beg for the "Flowers of the Fatherland," to grow in their windows, as reminders of home, show the most interest in their cultivation, and are the most successful growers. In the German hospital, the sick have dried their flower bunches and made paper bags to preserve them in. Those who are hopelessly ill have asked that their flowers be buried with them. In the day nurseries, the little toddlers forsake their toys for a flower, and betray extreme delight when one is given to them. It is said that flowers are better than monitors to keep the children in good order.

F. A. Benson.

Plant Notes.

Notes Upon Lilacs.

LILACS, especially many of the garden varieties of *Syringa vulgaris*, are met with wherever hardy shrubs are cultivated; but there are several species of the genus, which, although possessing ornamental qualities of the highest order, are rarely seen in gardens. It is proposed to figure from time to time a number of these in these columns when proper material can be obtained for the purpose, in order that they may become better known and their beauty appreciated.

The genus *Syringa* is composed of about a dozen species of shrubs or shrub-like trees distributed from southwestern Europe through central Asia and the Himalayas to Mongolia, northern China and Japan. They have opposite entire or rarely pinnately-divided, smooth or slightly pubescent, deciduous, or in one species persistent leaves, a terminal thyrus of small, generally fragrant, lilac or white, regular, monopetalous flowers, with a campanulate, irregularly dentate calyx; a corolla, with a long or short cylindrical tube and a four-lobed limb, revolute in the bud; two stamens inserted below the mouth of the tube, with short included, or subulate exserted, nearly extrorse anthers; an included style, with a slightly or deeply cleft stigma; a two-celled ovary, with two minute suspended ovules in each cell, a subterete oblong capsule flattened contrary to the narrow partition, two-valved, the valves almost conduplicate; and pendulous compressed seeds, with slightly winged margins, a thick membranaceous coat, fleshy albumen and flat cotyledons.

The species may be grouped as follows:

§ EUSYRINGA.

Tube of the corolla long; flowers purple.

* *Leaves green on both sides.*

1. *S. vulgaris*, L. Leaves smooth, long-petioled, cordate or ovate-cordate, contracted into a slender point; inflorescence often in pairs from the ends of the branches; calyx irregularly four-tubed, glandular puberulous; limb of the corolla concave, the lobes cymbiform; anthers included; fruit smooth, ovate.

Syringa vulgaris is a native of the mountainous region of central Europe from Piedmont to Hungary. It has been a favorite garden plant for three centuries, and has produced in cultivation a great number of varieties with more or less dense inflorescence, and with flowers varying from purplish red to pure white. Double-flowered and blotched-leaved varieties are cultivated. The leaves of this species and of all the varieties are often greatly disfigured in the United States during the summer and autumn months by the attack of a white mildew.

Syringa oblata (see illustration on this page) is not known in a wild state; it was first discovered by Fortune in a garden at Shanghai, and later by the Abbé David in gardens near Peking. Its perfect hardiness in this climate indicates its northern origin. *S. oblata* differs but slightly in botanical characters from some forms of *S. vulgaris*, a geographical variety of which, it should, perhaps, be considered, although, from a garden point of view, quite distinct. Here it flowers ten or twelve days earlier than the earliest varieties of *S. vulgaris*, and its thick leathery leaves, which are never attacked by mil-



Fig. 30.—*Syringa oblata*.

2. *S. oblata*, Lindl. Leaves broadly cordate or deltoid, sharply acuminate; thyrsus short and broad, often in pairs from the ends of the smooth or slightly puberulent branches; flowers large, appearing just before or with the unfolding of the leaves; calyx irregularly dentate, the teeth obtuse or subanceolate, the tube slightly glandular; lobes of the corolla round and flat; anthers included; fruit smooth-ovate, acute.

dew, turn in the autumn to a rich dark russet-red color, a character which should be taken advantage of by hybridizers to secure a new race of Lilacs with the large inflorescence of *S. vulgaris* and the foliage of this Chinese plant. *S. oblata* is a stout spreading shrub here, now eight or ten feet high, flowering profusely every year. There is a white-flowered variety, which has not flowered here.

3. *S. Chinensis*, Willd. Leaves ovate, acuminate, obtuse or rounded at the base or often contracted into the long,

slender petiole; calyx campanulate, irregularly four-toothed; tube of the corolla long and slender, the obtuse lobes of the limb spreading with inflexed margins, sometimes mucronate; anthers included; stigma two-lobed; fruit oblong, acuminate, smooth.

Syringa Chinensis, Willd. Berl. Baum., i. 48.

Lilac Varina, Dum. Cours. Bot. Cult., ii. 547.

S. Rothomagensis, Nouv. Duham., t. lviii.

S. dubia, Pers. Enchyr., i. 9.

S. correlata, A. Br. Sitz. Gesell. Nat. Berlin, 1873, 69.

This plant, although long cultivated, is not known in a wild state. It is believed to be of Chinese origin, and it is not uncommon in the gardens of Pekin. In general appearance, in the shape of the leaves, the size of the flowers and in the period of blooming, it is intermediate between *S. vulgaris* and *S. Persica*. This is one of the hardiest and handsomest shrubs in cultivation, producing its enormous rather lax clusters of flowers in the greatest profusion. There are varieties with rosy purple and with white flowers.

4. *S. Persica*, L. Leaves ovate, lanceolate, narrowed into an acute, sometimes mucronate point, entire or rarely pinnatifid, the base contracted into a slender petiole; thyrsus loose, the flowers spreading; calyx with four obtuse lobes; tube of the corolla long and slender, the ovate lobes with inflexed margins slightly spreading; anthers included; fruit linear, obtuse or apiculate, smooth.

Syringa Persica has long been an inhabitant of the gardens of Persia and India, whence it was introduced into Europe and America. Its native country, however, was long unknown until it was met with by Dr. Aitcheson, of the Afghan Boundary Survey, who found it "a very common shrub on the low and outer hills near Shalizan up to nearly 7,500 feet."* Varieties with lilac and with white flowers are common. *S. pteridifolia* is a variety in which the leaves are deeply lacinate.

* * Leaves pale on the under side.

5. *S. villosa*, Vahl. Young shoots smooth, slightly striate-angled, conspicuously marked with oblong white spots; leaves broadly ovate-lanceolate; contracted at the base into a short, stout, grooved petiole, and with scabrous margins and conspicuously reticulated veins, the pale under side, especially along the principal veins, covered with long, slender, scattered hairs; thyrsus elongated, narrow and often interrupted; calyx smooth or slightly pubescent, the short, obtuse lobes much shorter than the tube; tube of the pale, rose-colored corolla slender, four times the length of the calyx, the oblong lobes with strongly inflexed margins erect or spreading; stamens included.

Syringa villosa was discovered near Pekin about the middle of the last century by the French missionary, d'Incarville. It was found in the same region by David, and plants raised from seed sent to the Arnold Arboretum from Pekin by Dr. Bretschneider are now growing here. To this species should perhaps be referred, as M. Franchet hints in his paper upon the Chinese Lilacs, † *S. Fosikæa* and *S. Emodi*, which, as he points out, cannot be separated from d'Incarville's plant either by the shape of the leaves, the character of the inflorescence, or by the shape and size of the flowers. In the Himalaya plant (*S. Emodi*), however, the long, white hairs which cover the under side of the leaves of *S. villosa*, are replaced by a minute puberulence on the mid-rib, which is even less developed on the leaves of *S. Fosikæa*. The bark, color and markings of the young shoots and the habit of these three plants are identical, although in *S. Fosikæa* the leaves are narrower than in the Chinese plant, but not narrower than those of many Himalaya specimens. The plants of *S. Fosikæa*, now widely distributed in gardens, have all been propagated from a single plant discovered in a Hungarian garden, but not known to be wild in Europe, and probably of Asiatic origin.

6. *S. pubescens*, Turcz. Leaves ovate, three or four ribbed, cuneate at the base, one and a half to two inches long, pale-green above, pale below, the mid-rib distinctly pubescent; calyx smooth, with short, triangular, sometimes minutely mucronulate lobes; tube of the pale, rose-colored corolla very slender, six times longer than

the calyx; the lobes of the small limb short and oblong; fruit obliquely oblong, verrucose.

§ § SARCOCARPUM.

Leaves persistent.

7. *S. sempervirens*. Leaves coriaceous, short-petioled, ovate or suborbiculate, entire; cyme few-flowered; calyx cup-shaped, obscurely crenate; tube of the short corolla white, three times as long as the calyx. The lobes finally reflexed, thick, obtuse; anthers inserted in the middle of the tube; style slightly bifid; fruit drupaceous, with two cells; one abortive, the other containing at maturity a single, oblong, irregularly incurved seed.

Syringa sempervirens, Franchet, Bull. Soc. Linn., Paris, No. 77, p. 613, was discovered by the French missionary, the Abbé Delavey, at an elevation of 7,500 feet in the mountains above Tapintze in Yun-nan. It has not been introduced into cultivation.

§ § § LIGUSTRINA.

Tube of the corolla very short; flowers white.

8. *S. Amurensis*, Rup. Leaves ovate or oblong, obtuse or acuminate, contracted into a long, channeled petiole; thyrsus densely flowered; calyx sub-membranaceous, smooth, irregularly toothed; tube of the corolla included in the short calyx; the lobes obtuse; fruit oblong, obtuse, smooth.

Syringa Amurensis is a hardy shrub six or eight feet high, with white, fragrant flowers; a native of Manchuria.

9. *S. Pekinensis*, Rup. Leaves ovate or deltoid, obtuse or acuminate, rounded at the base or contracted into the long, slender, channeled petiole, dark green and opaque above, lighter on the under side; thyrsus densely flowered; calyx obscurely denticulate; tube of the white corolla barely longer than the calyx; fruit smooth, linear-oblong, acute, or slightly beaked at the end.

Syringa Pekinensis is a native of the mountains of northern China, where it was discovered by David. It is growing in the Arnold Arboretum, where it was raised from seed sent by Dr. Bretschneider from Pekin, but as yet has shown no disposition to flower. It is here a slender, tree-like shrub, perfectly hardy, and already ten to twelve feet high, with long, graceful, flexuous branches, covered with a smooth, yellow-brown bark, not very unlike that of a Cherry tree. A plant with distinctly weeping branches appeared among the seedlings raised in the Arboretum.

10. *S. Japonica*, Maxm. Leaves broadly ovate, acuminate, contracted into a sharp point, rounded or slightly cuneate at the base, smooth above, villous-pubescent on the under side; thyrsus many-flowered, calyx puberulous denticulate; tube of the corolla included in the calyx, the lobes thickened on the margins, apiculate; the smooth fruit oblong, obtuse.

Syringa Japonica is a native of Japan. It has been cultivated in the Arboretum for a number of years, where it makes a handsome small tree.

11. *S. rotundifolia*, Decne. Leaves orbicular, abruptly acuminate at the end, cordate or rounded at the base; panicle many-flowered; calyx membranaceous, slightly denticulate, tube of the corolla included in the calyx, the lobes ovate, obtuse.

Syringa rotundifolia, Decne., *Nouvelles Archives du Muséum*, ii, 44, is a native of south-eastern Manchuria, and has not yet been introduced into cultivation. C. S. S.

A Tropical Garden.

THERE was published in one of the early issues of GARDEN AND FOREST an illustration showing the entrance of what may be called, perhaps, a typical New England garden, or rather of a garden in which some of those forms of plant life typical of the vegetation of north-eastern North America—the White Pine, the Hemlock, the Oaks, Maples and the Hickories—are conspicuously displayed as Nature often groups them. Our illustration on page 223 of the present issue represents the entrance of a garden almost at the other extremity of the

* *Four Linn. Soc.*, xviii, 78.

† *Observations sur les Syringa du nord de la Chine*, Bull. Soc. Philomathique de Paris, July, 1885.

earth, and about as unlike a New England garden in the nature of the plants which adorn it as it is possible to imagine. It is the entrance to the Botanical Garden at Peradenia, near the famous city of Kandy, in the Island of Ceylon, where for seventy years the British Government has maintained one of the most important botanical establishments in the tropics. The Mahavelli River flows round the garden, which occupies a horseshoe-shaped peninsula among the mountains, and which on the land side is protected by impenetrable thickets of Bamboo. The climate is admirably adapted to insure the vigorous growth of tropical plants, which are found here of a vigor and size rarely attained in other tropical gardens. Peradenia differs widely in arrangement from most of the so-called botanical gardens of the world. The plants are not huddled

thirty buttresses, from which huge snake-like roots spread out over the surface of the ground for a distance of one or two hundred feet. It is the "Snake-tree" of the natives. The collection of Palms in this garden, from both the old and the new worlds, is very large, and not the least remarkable is the native Talipot Palm (*Corypha umbraculifera*), which, unfortunately, does not appear in our illustration. No other tree, perhaps, presents a more striking and remarkable spectacle than the Talipot when it shoots up its giant inflorescence high above the top of the mountain forests in which it grows. The trunk is perfectly straight and pure white, like a marble column, supporting at its summit, often one hundred and fifty feet from the ground, a crown of fan-shaped leaves, which, on fully grown specimens, have a surface of 150 to 200 square feet, and from which,



A Tropical Garden.—See page 222.

together in formal beds, but are grouped naturally through the garden, which is about one hundred and fifty acres in extent, and produces a broad, park-like effect. The great clumps of different species of Palms near the entrance will serve to indicate how the most important natural groups of plants are managed in this truly noble garden, and to show to our readers some of the beauties of tropical vegetation. The large tree, the top of which appears at the left of the picture above the Palm in the foreground, is the *Ficus elastica* or Rubber-plant, so commonly grown in this country as a small pot-plant for the decoration of living rooms. In its home in the tropics it attains the size of a noble forest tree, often a hundred feet in height, with an enormous leafy crown borne on branches spreading out horizontally forty or fifty feet from a ponderous stem, supported on twenty or

once in the life-time of the tree—generally when it is seventy or eighty years old—shoots up a pyramidal inflorescence thirty or forty feet in height, and covered with countless myriads of small yellow-white flowers. When the seed is ripe the tree dies. The "Ola" paper of the Cinghalese was made from the leaves of this tree; and all the old Paskala manuscripts in the Buddhist monasteries on the island were written with an iron stylus on paper made by boiling narrow strips of Talipot leaves. We shall hope on another occasion to illustrate some of the remarkable plants in the Peradenia garden.

"Everything made by man's hand has a form which must be beautiful or ugly: beautiful if it is in accord with nature and helps her; ugly if it is discordant with nature and thwarts her."

Cultural Department.

Celery.

THIS is probably the most important of all our garden crops.

It can be used every day in the year; from September till April as blanched Celery, and from May till August as green Celery for flavoring soups. An abundance of blanched Celery can be found in the New York and other city markets in July and August, but it is Kalamazoo and not Long Island Celery. We have tried hard enough to have good blanched Celery in summer, but have always failed, the crop being destroyed by rust. Why not grow it in moist land, as they do in Kalamazoo? We have tried that, and on the naturally moist or wettish land it has rusted far worse than in good, common garden soil.

The White Plume is a most excellent Celery for use from September till New Year's, and as it is self-blanching, and the blades, as well as the stalks of the inner leaves, become white, it has an uncommonly handsome appearance. Although it is said that this variety needs no earthing up, we find that banking lengthens the stalks and renders them much more tender. Golden Heart is a most excellent all-round variety, dwarf, and suitable for early or late crops. New Rose is much like London Red. The pink tinged Celeries are seldom esteemed as highly as the white ones, but they are the finest flavored and capital keepers. Boston Market, regarded so favorably around Boston, and there grown with all its sprouts, is not so great a favorite here. Its best characteristic is that it keeps well. In growing it but one head should be allowed and all the sprouts rubbed off at planting time and then again before the banking is begun. Henderson's Half Dwarf is an excellent sort for use before March, but does not keep later. The Golden Self-Blanching is after the style of White Plume, only yellow, and in no way to be preferred. The giant Celeries require too much room, are unwieldy to handle, are poor keepers, and their leaf stalks are often hollow.

Seed of Golden Heart sown in a flat in the green-house about the end of January, and the seedlings afterward pricked off into other flats and then into a cold-frame, are now planted out in rows three feet apart in the garden. These now furnish a good supply of leaves for flavoring. But they will be of no use for white Celery; if kept for this purpose most of them would run to flower and all would rust. A March sowing gives the earliest white Celery here. The main crop was sown April 26th in a well prepared out-door bed, and the seedlings are now up in their second leaf and fit for pricking off into beds. We never transplant directly from the seed bed, but first prick off the seedlings four to six inches apart into well prepared beds, there to remain till planting time. By this means well-rooted, stocky plants are secured. The main crops are planted out in July and as the ground is ready; sometimes it is August before the planting is over. Celery succeeds Marrow Peas, early Snap Beans, Potatoes, Cauliflower, Cabbage or Strawberries. For the crops we shall use before New Year's, we line off the ground in rows four and one-half feet apart and throw out the ground in the rows to a depth of six inches and to a width of ten inches. This gives us ample room for earthing up the crop, and the trenches are handy for holding manure and water. We manure broadcast for the spring crop and in the row for the Celery. Planting on the level has been tried here, but with indifferent success. For Celery to be used after New Year's we plant in the same way, but in rows only three feet apart; this is because the late crop should not be earthed up, except to "handle" it, before it is packed into trenches to keep through the winter.

One of the chief points to observe in growing Celery is that from the time it germinates till it is packed away for winter it should never suffer by drought.

In banking up Celery in fall some discretion should be used. Celery banked up in August whitens in three to four weeks, that banked up in September in four to six weeks, but that banked up in October will not whiten before New Year's, if then. Do not bank up Celery all at one time, but a little at a time, and never "handle," bank or store Celery when it is wet or damp, else rust or rot may overtake it. Celery to be used before Christmas should be banked in September, but avoid banking or handling late winter Celery before the beginning of October. September and October are the best growing months for Celery.

Our Celery is wintered in trenches on a warm, sunny slope. The Celery is in single rows, and the trenches are as deep as the Celery is long, the plants being packed up close against each other. Four of these rows, each nine inches distant from the other, are formed into a ridge in order to lead off the surface the

rains of winter. And to further keep them dry in winter, we cover them with boards. We also use salt hay and forest tree leaves to exclude hard frost from the ground. The Celery keeps in this way in these trenches till the spring thaws set in; then it is lifted out, all decaying matter cut off, and it is buried again, but this time above ground, with earth between the plants and shutters over them. Celery in plenty was kept in this way up till the 7th of May. But towards the end of April Celery weakens perceptibly.

Now, while these dates are an very well for Long Island, in less favorable localities Celery seed should be sown proportionately earlier.

It is a fact that Celery is often spoiled in preparing it for use, by washing it. In order to have Celery in its finest condition, as regards crispness and flavor, it should not be washed or robbed of all its roots till immediately before it is prepared for table. Washing and dressing Celery before sending it to the kitchen or some two or three days before using it, as happens when it is sent to town, may make it look well, but it surely injures the flavor of the plant.

Glen Cove, L. I.

W. F.

Spathoglottis Kimballiana.—This is a handsome and very remarkable Orchid, very rare, and the finest of the genus. It is now in bloom with W. S. Kimball, Esq., of Rochester, N. Y., in whose honor the plant is named. It flowered for the first time in England some six weeks ago in the collection of Sir Trevor Lawrence, and has been awarded a first-class certificate by the Royal Horticultural Society of London. Its flowers are as large as *Phalænopsis grandiflora*, and of a very pleasing yellow color, being borne many together on a fine erect spike. It was discovered in 1886 by I. Forstermann in the Malayan Archipelago, who first (from a distance) thought it a yellow *Phalænopsis*, so great was the resemblance of the flowers to that species. It is sparingly found growing on rocks in a very moist situation.

Oncidium pulvinatum.—This fine Oncidium, introduced many years ago, is now rarely met with in collections, having been discarded of late years by cultivators, owing to its cultural requirements not being successfully carried out. A grand specimen in fine health is now flowering in the well kept collection of H. Graves, Esq., Orange, N. J. It has four stout, many-branched spikes densely laden with upwards of 1,200 flowers, lip being of a fine bright yellow, the sepals and petals beautifully marked with dull chocolate. Pot culture and intermediate house temperature suit this species admirably, with a good supply of water during active growth.

June Notes from the Flower Garden.

DOUBLE-FLOWERED herbaceous Pæonies find a place, and generally a prominent one, in all old country gardens, where they spring up and flower and die down year after year. Single-flowered Pæonies, although much more beautiful, are less often seen, and gardeners in this country are only just beginning to appreciate them and to realize that among them are some of the very finest of all hardy herbaceous plants. Nearly two dozen species or sub-species of Pæony are known, natives of southern Europe, northern and western Asia and western North America; of these all but one are herbaceous. Many of the species have long been cultivated, especially *P. albiflora*, a Siberian plant, and *P. officinalis*, from southern Europe, and they have given rise to numberless varieties, both single and double flowered, and with petals varying from pure white or pale pink to deep scarlet. Many of the species have probably never been cultivated in this country, and no one has yet made here anything like a complete or even a representative collection of the best garden varieties. Such a collection, could it be properly studied and correctly named, would be of great service to gardeners, and would well repay systematic study. Certainly there is no class of hardy plants of so much beauty which are so inadequately known in this country. The most beautiful single-flowered Pæony here, in a very small and badly-selected collection, is *P. albiflora*, with deliciously fragrant, pure white satiny flowers, four or five inches across, two or three being produced sometimes from the same stem. Vesta, a seedling, raised evidently from the last, has immense pale pink flowers, shaded delicately with rose, and when fully expanded ten or twelve inches across. Abyla has smooth, rosy pink flowers, three inches across, and is a less desirable plant than Galopen, with much larger pink flowers, but not otherwise distinguishable from it. Algeria has dark purple-red, satiny flowers, and Gordens, very handsome, large, spreading, dark purple-red

flowers. *Ranunculiflora* was in bloom ten days earlier than any of these; it is a form no doubt of *P. officinalis*, with rosy red, not very large nor distinct flowers. I do not pretend to vouch for these names, which are those under which the plants were imported from Europe.

The showiest herbaceous plant just now in flower in the gardens in this neighborhood is a very fine variety of the Caucasian Poppy (*Papaver bracteatum*), raised several years ago by Mr. Francis Parkman, in which the flowers are large—seven or eight inches across, deep blood-red, and handsomely marked on the inside of the petals with a dark purple-black eye. It is a very hardy plant, which, when once fairly established, spreads into a broad mass, from which the stout, naked scapes rise to a height of two to three feet. This Poppy rarely produces seeds; and is propagated by root cuttings, taken in the summer, before the plants begin their second or autumn growth. The young plants are best grown in pots, until they have attained considerable size, and then, as they transplant badly, they should be planted without disturbing the roots where they are to remain permanently.

Vincitoxicum acuminatum is a Japanese plant, with twining stems two or three feet long, softly pubescent, long green leaves, and loose axillary, long-stalked clusters of pure white star-shaped flowers, which it continues to produce during several months. It is rather an interesting addition to the list of hardy summer-flowering perennials.

Gillenia trifoliata, the Bowman's Root of southern woods, is an excellent plant in the herbaceous border, where it makes a wide, graceful mass of slender red stems, two or three feet high, covered with light, three-lobed leaves, and many pretty white-petaled flowers in loose panicles from the ends of the branches.

Allium caruleum, a Russian species, is a good border or rock-garden plant, with showy, compact heads of bright blue flowers, which, individually, are not large. It is perfectly hardy, and well worth cultivating for the peculiar color of the flowers. Another Onion (*Allium Moly*), a native of southern Europe, and a very old garden favorite, still holds its own among all the more recent introductions of this family. A mass of this plant, when the bright yellow flowers, which appear in compact umbels above the broad leaves, are open, is always a pleasant sight, which year after year will be renewed without care or trouble.

Vancouveria hexandra is a low herb, belonging to the Barberry family, and a native of the North-west coast, where it inhabits the moist, shady Coniferous forests. It takes kindly to cultivation here, and has now spread over a considerable space among the rocks in the shadiest part of the rock-garden, where now it is throwing up in great profusion its tall, naked, slender flower scapes. They are often two feet high, and bear near the summit a number of small, white, nodding flowers on long, slender, filiform, drooping pedicels. The thin, pale green leaves are composed of two or three stalked, obtusely-lobed leaflets, which possess in themselves no little beauty.

But the handsomest flower in the garden, and one of the handsomest of which the North American flora can boast, is the great red and white Lady's Slipper (*Cypripedium spectabile*). It is not a rare plant at all in Northern bogs, and one of the easiest of all the terrestrial Orchids to cultivate, either in the open border or in a pot, but no other *Cypripedium* can compare with it in beauty, and it quite puts to shame all the high-priced tropical species and the innumerable and never-ending garden hybrids which Orchid-growers now produce so easily. *Cypripedium spectabile* is a downy plant, with leafy stems, a couple of feet high, bearing one or several pure white flowers, with an inflated, prominent, rosy-purple lip. There is not a garden which cannot be made more attractive by bringing into it this charming plant.

Boston, June 20th.

C.

Notes from the Arnold Arboretum.

THE Rocky Mountain Raspberry (*Rubus deliciosus*), although one of the first of the central and southern Rocky Mountain plants known to botanists, having been discovered in 1820 by Dr. James, the surgeon of Long's expedition, has only been in cultivation a few years, comparatively, and is still very little known in gardens. It is one of the handsomest and hardiest of the early summer-blooming shrubs. Like the well known *Rubus odoratus* and *R. Nutkanus*, it has simple leaves and large flowers. *R. deliciosus* has erect, arching, graceful stems four or five feet high, covered with light brown or gray striated bark. The bright green leaves are borne on slender red petioles one and a half or two inches long. They are two inches or more in diameter, reniform-orbicular, rugose, three to five lobed,

sharply serrate, tomentose pubescent when young like the calyx and the young shoots, which are also red. The erect, few, generally one-flowered peduncles, are long and slender. The flowers, when expanded, are nearly two inches across, and pure white. They resemble miniature Cherokee Roses, and present a charming appearance when they cover the arching branches of the plant. The fruit is small, composed of three or four dry, tasteless carpels; and the delicious flavor, to which the plant owes its name, was developed doubtless in the imagination of the hungry botanist who discovered it. This plant may be easily raised from seed, which is produced here, but not very abundantly, or by cuttings; it is perfectly hardy, and will thrive in any exposure and in any good soil. Stronger shoots and better flowering wood are obtained by cutting out the old stems after they have finished flowering, thus stimulating the growth of vigorous young wood.

The Nine-Bark (*Physocarpus*, or, as it is more generally known, *Spiraea opulifolia*) is a familiar plant in the gardens and along the borders of woods and streams in the Northern States. It will not be in flower here for two or three weeks yet, although its near relative from another continent, *Physocarpus Amurensis* of Manchuria, where it was discovered in 1856 by Maximowicz in the mountains along the Amoor River, has been flowering here for several days. It is a large shrub, with stout erect branches, six or eight feet high, covered, like those of its American congener, near the base with loose bark, separating into numerous thin layers. The ample leaves are broadly acuminate, three to five lobed, and sharply serrate. The large, white, long-pedicel flowers, three-fourths of an inch across, with conspicuous purple anthers, are borne in rather loose subracemose corymbs, terminal on lateral red, leafy young branches, produced in great profusion from the stems of the previous year. The Manchurian Nine-Bark is a very hardy, free-growing shrub, rather coarse in appearance and habit, but well suited to grow in the shade or to produce bold, effective masses of foliage in large shrubberies or on rocky banks.

Among *Spiræas*, two species now in bloom in the Arboretum, *Spiraea alpina* and *S. cana*, are rarely seen in gardens here, although possessing very considerable merit as ornamental plants. *S. alpina*, like *S. Thunbergii* and *S. prunifolia*, belongs to the section of the genus in which the corymbs of flowers are produced from the ends of very short lateral branches. It is a graceful plant, three or four feet high, with slender, arching, flexuous, angled stems and linear-lanceolate leaves which are sharply acuminate, pale green, entire or sometimes sharply serrate towards the apex. The handsome corymbs of white flowers are produced in great profusion, and in size and general appearance are not unlike those of the well-known *S. Cantonensis* (*Reevesiana*), in which, however, the inflorescence appears at the end of long lateral branches. *S. alpina* is a native of the mountains of Siberia and Mongolia. It is very hardy here and soon grows into a handsome specimen. *S. cana* is a very variable species with erect, round, pubescent branches, growing here to a height of from three to four feet. The leaves are elliptical, silky, villous on the lower side, entire or sometimes with three or four sharp teeth at the end; the small, many-flowered corymbs are borne at the end of long leafy branches of the current year. It is a native of Croatia and Dalmatia. *S. Sauranica*, a larger and less pubescent plant and not rare in gardens, is considered a variety of this plant.

Among the early *Viburnums* in flower is *V. dilatatum*, a common Japanese plant not uncommon also in central China. Here it is a low, wide-branching shrub, now three or four feet high, with rigid spreading branches, covered with very dark gray bark; handsome ovate or obovate leaves three or four inches long, rounded or sometimes abruptly acuminate at the end, sharply and conspicuously serrate above the middle, otherwise quite entire; bright yellow-green above, paler on the under side, with very prominent mid-rib and primary veins. The under side of the leaves, especially along the veins, petioles and young shoots, are densely covered with short white tomentum. The small, creamy white flowers are produced in a wide, open-branched, long-stalked cyme, from the end of short, leafy branches. The orbicular-ovate fruit, which is not produced here very abundantly, is scarlet. This is a very hardy plant, not showy in flower, but worth cultivating for its handsome foliage, which, when bruised, has, as does the wood, an exceedingly strong and disagreeable odor.

Viburnum pubescens, although rarely seen in gardens, is an exceedingly beautiful species in cultivation. It is a compact shrub, two or three feet high, with rigid, erect branches and ovate, taper pointed leaves, remotely and sharply serrate, except near the base, conspicuously pinnately veined, the under side, as well as the young shoots and very short petioles, soft

pubescent; the flat cymes of small, white flowers, which, in cultivation, are produced in the greatest abundance, appear at the ends of the young branches. The fruit is dark purple or nearly black. *Viburnum pubescens* is found along the borders of woods from western Vermont to Wisconsin, extending south to New Jersey and Kentucky. It is very hardy and flourishes in good garden soil. Like so many North American shrubs, it has been too much neglected as a garden plant.

And this is true as well of the Sheep-berry, *Viburnum Lentago*, a very handsome, small tree, or tree-like shrub, which sometimes attains a height of twenty-five or thirty feet, with a clear, straight trunk, supporting a round compact mass of foliage. It has large ovate, sharply pointed leaves, three or four inches long, closely and sharply serrate, and borne on long margined petioles, which, like the buds, are covered with brown scurf. The broad flat cymes, four or five inches across, of small, creamy white flowers, are sessile. The black, oval fruit, half an inch long, ripens in the late autumn, and has an agreeable, but rather insipid flavor. The wood of this species has a most disagreeable odor. *Viburnum Lentago* is a common northern plant, widely and generally distributed from the shores of Hudson Bay to Georgia and Missouri, attaining its best development far north, and found generally in deep, rich soil, along the borders of swamps or streams, or on high rocky ridges. The compact habit of this plant, its handsome foliage and showy clusters of flowers, entitle it to general cultivation.

Viburnum macrocephalum, of which the form with all the flowers sterile only is known, is not often seen here. It was discovered by Robert Fortune in gardens at Shanghai and Chusan, and has always been rather a favorite plant in England. Here it is perfectly hardy and flowers every year, although it does not grow with any vigor, or produce its cymes of pure white flowers, which are generally mistaken for those of a white-flowered *Hydrangea hortensis* in much profusion. It is a low shrub, with rigid, wide-spreading branches, covered with smooth, light gray bark, and rather small, pale, oval leaves, with small remote teeth, and covered on the under side with stellate pubescence. It is usually grafted on *Viburnum Lantana*, and must then be constantly watched to prevent the stock from sending up suckers, which rob the plant of what little vitality it possesses here.

Among plants of recent introduction of the very first class, from an ornamental point of view, must be mentioned *Lonicera Alberti*, a dwarf Honeysuckle, discovered a few years ago by Dr. Albert Regel in the high mountains of eastern Turkestan. It is one of the Bush Honeysuckles, and is a low, smooth plant, with long, slender, spreading, pendulous branches, which only rise a foot or two from the ground, but soon make a wide, graceful mass of light green foliage. The leaves are deciduous, opposite, glaucous, linear oblong, obtuse, entire, or with one or two teeth near the base, from an inch to an inch and a half long, and are borne on short petioles. The fragrant flowers are produced in pairs on short axillary peduncles; the cylindrical tube of the rosy lilac corolla is four times longer than the calyx, with a spreading limb of five nearly equal, ovate-elliptical lobes, about three-quarters of an inch across when expanded. *Lonicera Alberti* is a perfectly hardy plant of easy cultivation; it is admirably suited for the margins of shrub beds, where its graceful branches can spread out over the turf, for the rock-garden, or for covering rocky banks.

Lonicera Maximowiczii is another handsome Bush Honeysuckle now in flower. It is a native of the mountain forests of eastern Manchuria. Here it makes a neat bush, with upright branches three or four feet high, covered with pale gray bark. The leaves are light green and shining above, paler on the lower side, which is covered with long, slender hairs; they are an inch and a half or two inches long, and hardly exceed the slender peduncles, which bear two bright, rose-colored flowers, the limb deeply two-parted, the upper division three-lobed. This is a very hardy plant, worth a place in a large collection of shrubs. ♀.

June 15th.

The Forest.

The Forest Vegetation of North Mexico.—V.

TURNING away at last from Chihuahua and the region stretching along the line of the railroad far northward and still farther to the south—a region made familiar by two seasons of diligent searching out its scanty vegetation over wide and weary desert areas of mountain and

plain—a region rich only in the matchless tints of its landscape and the floods of white sunlight overspreading all—we set out joyfully for a fresh field amidst the western Sierra Madre.

Following the route of Wislizenus, the early explorer, on his involuntary journey from Chihuahua to Cusihuiriacic, as nearly as a wagon road can follow a bridle trail in its devious course over the mountains and through their cañons, we cross three chains of mountains with intervening plains or valleys of such character and bearing such forest vegetation as has been described. Beyond Carretas our road mounts a high mesa, whose marginal bluffs are covered with an open growth of low Oaks and Junipers of the species already mentioned. The gullies, which cut into the mesa from every side, are occupied by the same growth, and from the gullies the trees scatter out over the adjacent mesa for a short distance; but they appear to have been unable to gain a foothold on the central area of the mesa. Some ten miles further on, however, where the mesa, gradually ascending, terminates in a broad ridge, its summit, as well as its slopes, is covered with a thin forest. Here, then, in our journey up to the mountains we have reached, at an elevation of 6,000 feet, the timber line. Descending from the mesa by a steep and tortuous grade, our road enters a wooded cañon of a pine covered range, and winding up through it, crossing its swollen stream thirty times in a distance of seven or eight miles, threading its narrow intervalles and clambering over its frightful ledges, brings us after a journey of seventy-five miles to the old mining town of Cusihuiriacic, noted among botanists as being the place where Wislizenus was held prisoner of state, as he styled it, from Sept. 13th, 1846, till the 3d of March following, restrained during most of that time within limits five miles from the town.

La Bufa towers over the cañon, through which straggles the town, a sharp peak whose summit is little less than 8,000 feet elevation, the highest point of the divide within view. Southward the divide lies amongst a broad belt of mountains, confused and abrupt upheavels of porphyritic rock, covered with forests of Conifers and Evergreen Oaks, which to eyes grown weary of the bare ranges to the eastward, seem luxuriant. As the slopes of the Bufa and the hillsides of its immediate vicinity have doubtless suffered deforestation from an early day, to supply the needs of the town and its mining furnaces founded in the beginning of the eighteenth century, it is probable that Wislizenus, who had no time for collecting on his forced ride from Chihuahua, in those forests first made the acquaintance of *Pinus strobiformis*, *P. Engelmannii* and *P. Chihuahuana*, three species published by Engelmann in Wislizenus' Report of his Mexican journey. The Arbutus mentioned by Engelmann in connection with these Pines nearly answers the description of *A. petiolaris*, HBK.; the Juniper may be either *J. occidentalis*, Hook., var. *conjugans*, Engelm., or *J. pachyphloea*, Torr., both of which are of common occurrence in this district; and the dwarf Evergreen Oak is perhaps *Quercus oblongifolia*, Torr.; but the mention of a *Thuya* must have been an error. That Wislizenus should not have secured specimens of *Quercus hypoleuca*, Engelm., *Q. grisea*, Leibm., and *Q. fulva*, Leibm., even on the Bufa common with small specimens of several of the above, surprised me; as did the finding, during my stay of five days in that vicinity, of more than a score of herbaceous plants, which have remained undescribed until recent years. But this shows the unfavorable circumstances, lamented by Wislizenus, under which his remarkable collection was gathered.

Northward from the Bufa for a few miles the divide is but a broad swell connecting two great plains, which are more widely separated farther north, where the divide rises again to an altitude of perhaps 9,000 feet. The plain lying east of the divide sweeps down beyond the horizon to the laguna of the deserts near the Rio Grande; that to the west, twenty or thirty miles wide and one hundred and fifty long north and south, rimmed on one side by the divide and on

the other by the Cordilleras, is the great basin of the Papi-gochic, or upper Yaqui. Fifty miles away in the north-west, looking across this plain and beyond a blue mountain chain which it bears, we see a lofty crest of the Cordilleras, which is the goal of our journey.

C. G. Pringle.

Correspondence.

To the Editor of GARDEN AND FOREST :

Sir.—I am a little surprised in reading the interesting notes on the Ginkgo tree in your last number that no mention is made of the specimen on Boston Common, which has a historical interest worthy of record. It formerly stood in the grounds of Gardiner Greene, Esq., on what was then Pemberton Hill, now Pemberton Square. After his death the estate was sold, and a condition of the sale was that this tree should be preserved, as there was then but one other in the country, which was the one you allude to as planted by Dr. Hosack. I remember perfectly seeing the tree on its way to the Common in 1834, or perhaps 1833. It was then some thirty feet high, and was transported on a low four-wheeled truck built for the purpose, and was planted on the Beacon Street Mall, directly opposite the house at the corner of Joy Street, to which Mrs. Greene had removed from Pemberton Hill.

Its removal was a subject of general interest at the time, as the papers announced that it was a very rare tree from Japan, a region almost as little known to us then as the moon.

It still lives and thrives, and its site has been rendered classic by the pen of the "Autocrat," as it is the starting point from the Beacon Street Mall of the "Long Path," to which he makes such touching allusion.

There are some fine specimens of the Ginkgo in Providence; but when I last saw them, five or six years since, they still preserved the stiff habit you describe, though they were some fifty feet in height.

Minneapolis, June 8th.

H. W. S. Cleveland.

[The old Ginkgo on Boston Common is well known to many of the older inhabitants of that city. It is now not more than forty feet high, and is not a large or a fine tree for its age, having perhaps never entirely recovered from the effects of the removal; it has for many years been crowded and overshadowed by neighboring Elms, and many of its branches are dead or dying. It has never taken on the graceful habit which this tree assumes at maturity when growing under favorable conditions.—Ed.]

New York, June 18th, 1888.

To the Editor of GARDEN AND FOREST :

Sir.—I have noted with interest the remarks of "Phylodendron," in your issue of June 11th, on the conditions of the Norway Spruces in Central Park.

About a year ago the authorities of the park became alive to the necessity of removing dying, deformed or crowded trees, and since that time 6,215 trees of this objectionable character have been cut down. Of this number 760 have been Norway Spruces.

The effects of this work may be seen along the west drive of the park, and particularly on Fifth Avenue, between Sixty-fifth Street and Seventy-second Street. In many places no replanting has been found necessary, as the original growth was sufficiently dense to allow a considerable margin for thinning-out. In other places, such as the bank on Fifth Avenue, just referred to, a new plantation has been established, consisting of shrubs and trees such as *Spiræa opulifolia*, *Philadelphus grandiflorus*, *Lonicera fragrantissima*, *Cornus sanguinea*, *Viburnum dentatum*, *Betula alba*, *Pinus Strobus*, *Pinus Mugho*, *Picea orientalis*, *Pseudotsuga Douglasii*, etc.

The park authorities have frequently been criticised for the radical cutting-out thus undertaken, and it has been thought best to remove the least healthy trees first and cultivate intelligent public-sentiment in regard to this cutting by managing it in such a way as to prevent a striking appearance anywhere of denudation.

Several large groups of diseased Norway Spruces are marked for removal during this summer and autumn, and by another spring I think there will be few of these objectionable Spruces left in the park.

SAM. PARSONS, JR., Superintendent of Parks.

Periodical Literature.

Harper's Magazine for July contains an article by Mr. F. H. Spearman called "The Great American Desert," describing those districts, formerly known by this name, which are now largely under cultivation and furnish support to a rapidly growing and prosperous population. It differs from many articles on the newer regions of the Great West we have read in being sensible as well as emphatic—in being neither a pessimistic tourist's chronicle, nor a panegyric concocted in the interests of land schemers, railroads, or the "boomers" of embryo cities. One paragraph we are glad to quote as reinforcing opinions already voiced in the editorial columns of GARDEN AND FOREST. After speaking of the way in which the great vexed question of the rainfall has been discussed by "experts who know absolutely nothing about the actual facts in the case," and by residents who are eager to explain the increase in rainfall, they assume, by all sorts of ridiculous reasons, Mr. Spearman shows how no perceptible increase in the amount of rainfall need be assumed to account for the increased humidity of the soil. "It is certain," he says, "that the buffalo grass sod which has covered these plains for centuries has become as impervious to water as a cowboy's slicker. Hence the rain never penetrates it, but rushes off the 'divides' in a fury to reach the rivers. Any one who has seen it rain on the plains can understand something of the deluge which covers the entire prairie to the depth of twelve to twenty-four inches during summer showers. It is easy to comprehend then how the numerous cañons in Kansas and Nebraska are cut by the eagerness of the flood to roll eastward. But when the prairie sod has once been plowed, the soil absorbs water like a sponge. After a day's heavy rain there is no mud visible in a plowed field; the moisture soaks downward to great depths, and the soil retains it through weeks of dry weather afterward, sustaining its crops without additional rain for a wonderful length of time. It is at least reasonable to suppose that under this changed condition of large portions of the soil, which now absorbs rain instead of shedding it like a rubber coat, the climate retains its atmospheric moisture better, and the rainfall becomes more regular, less falling at a time, but falling oftener. This change may account, too, for the heavy dews which of late years have been remarked in this country—a thing absolutely unknown ten years ago. The upturned soil parting with but a little of its moisture every day, it returns to it at night, well nigh as refreshing as a shower."

One of the illustrations which accompany Mr. Spearman's article shows a rude rustic bridge, built of logs, and, apparently, ropes, which is most interesting in the way it reproduces the construction of the vast bridge of stone and iron that stretches between New York and Brooklyn.

In Mr. Chas. Dudley Warner's "Studies of the Great West," in the same number of *Harper*, he speaks of the Central Hospital for the Insane of the State of Illinois as having "a large conservatory of plants and flowers," which is "rightly regarded as a remedial agency in the treatment of the patients." His description of the plan of Indianapolis, which its inhabitants are fond of calling the "Park City," is interesting.

A third noteworthy article in this magazine is one by Mr. Peter Henderson on the "Street Trees of Washington."

Recent Plant Portraits.

Botanical Magazine, May.—DENDROBIUM CLAVATUM, *t.* 6993; a magnificent species with large, orange colored flowers nearly three inches in diameter across the sepals, which, as well as the much larger orbicular petals, are spreading; the uniform or almost circular limb of the lip deep purple, margined with golden yellow. It has tufted, pendulous stems, two or three feet long, and short, broad, elliptical leaves. Although long known to botanists and one of the earliest discovered of the golden flowered Indian Dendrobies, this plant is here first figured in all its great beauty. It must not be confounded with Roxburgh's plant of the same name—the *D. sulcatum* of Lindley, a much more common species.

ALLIUM SUWOROWI, *t.* 6994, a tall, handsome species from central Asia, where it was discovered by Dr. Albert Regel on the Kirghis desert and near Bokhara. The tall, stout scape springing from a basal rosette of glaucous-green leaves, bears a large, long handsome, dense umbel of dark mauve-colored flowers.

ALPENIA OFFICINARUM, *t.* 6995; "the subject of this plate, the 'lesser or Chinese Galangal,' was formerly in great repute as

an aromatic stimulant amongst the Arabs and Greeks, and formerly in western Europe, but is now banished from the British Pharmacopœias. The plant that produced it was unknown to botanists till 1867, when Mr. Sampson, accompanied by that excellent botanist, the late Dr. Hance, of China, discovered it near the village of Tung-sai, on the peninsula of Lei-chan-fu, opposite the Island of Hainan itself." Its nearest affinity is the well-known *A. culcurita*, and Sir Joseph Hooker is inclined to believe it to be referable to that plant.

DOUGLASIA LÆVIGATA, *t.* 6996, an alpine plant from the mountains of Oregon.

PASSIFLORA VIOLACEA, *t.* 6997; a free blooming, green-house climber, believed to be a native of Rio Janeiro. It has three-lobed leaves and handsome lilac flowers, on solitary, slender peduncles, six to eight inches long, upcurved toward the end.

RHODODENDRUM ARGENTUM.—*Revue Horticole*, May 1.

CHRYSANTHEMUM BARON D'AVÈNE and C. JULES BARIGNY.—*Revue Horticole*, May 1. Two new varieties raised by M. T. Délaux, the first a cup-shaped flower with rose-violet petals, those in the centre much lighter, almost white; the second of the Japanese class, with narrow rose-colored petals.

SALIX BALSAMIFERA, Figs. 1-5, *forma typica*; Fig. 6, var. *vegeta*; Fig. 7, var. *lanceolata*; Fig. 8, var. *alpestris*.—*Bulletin Torrey Botanical Club*, May.

THE GERMAN PRUNE.—*Canadian Horticulturist*, May. One of the most generally cultivated fruits of central Europe—the German Prune—has been found to give excellent results in some parts of Canada, where its more general cultivation is now recommended.

ERYTHRONIUM GRANDIFLORUM, var. ALBIFLORUM.—*Gardener's Chronicle*, May 5. A little known, but very handsome plant, of Oregon and Washington Territory.

VITIS PTEROPHORA, *Gartenflora*, May 15th.—A handsome Brazilian species, with green and red leafy branches, from which descend remarkable red cordy branches, forming at their extremities, where they can reach the water, great masses of rootlets like the tail of a horse. The branches produce from their extremities at the end of the season of growth elongated tubers, formed by the lengthening and swelling of a sub-terminal internode. These tubers are five or six inches long, green and fleshy. They finally drop off, and reaching the ground produce, under favorable conditions, new plants. The tendrils of this plant are equally curious. They are slender and forked, and provided at the end of each fork with an adhesive disk. When the tendrils reach a support the disks adhere to it and greatly enlarge; and if the support will admit of it the tendril will embrace it, secreting from its surface a viscid tissue which glues it fast to the supporting surface. The flowers are green and inconspicuous. There is an earlier figure of this plant in the *Botanical Magazine*, *t.* 6803; and it has been figured in the *Gardener's Chronicle* as *Vitis Gongyloides*.

Notes.

The Second Annual Session of the Texas State Horticultural Society was held at Denison, Texas, last week.

According to European dispatches to the daily press, immense tracts of forest land in Sweden have been recently swept by fire. The town of Sundsvall, on the Gulf of Bothnia, is said to have been almost entirely destroyed by the flames.

The Rose and Strawberry Exhibition of the Massachusetts Horticultural Society was held at Boston on the 26th and 27th of June. The exhibition of Strawberries was finer than it has ever been before. The Roses, on the other hand, although shown in great abundance, were somewhat inferior in quality to those of last year. A nice feature was a collection of forty or fifty species and varieties of single Roses, for which there seems to be a growing appreciation. Besides Orchids and a generous display of cut flowers, there was a good collection of flowering shrubs, the most attractive of which was an *Andromeda speciosa*. A noteworthy plant was a faultless specimen of *Rhynchospermum jasminoides*, which was over six feet high.

The passion for Orchids is developing in Germany, although more slowly than in England and France. A large number of the plates published in the various German horticultural papers are now devoted to representations of new or rare Orchids, and although previous auction sales had been so unsuccessful that for two years none had been held in the empire, one recently organized in Berlin by an English firm, amid many predictions of failure, proved entirely satisfactory. The trade were large buyers and many new-fledged amateurs made very extensive purchases.

The official programme for the horticultural section of the Paris International Exhibition of 1889 was issued in January. There is to be a permanent exhibition, lasting from May 6th to October 31st, accompanied by eleven special exhibitions of five or six days each. Some of these last are to be open to all classes of exhibits pertaining to the section of horticulture, while others are to be more restricted in character. All exhibitors who desired to make plantings this spring were to send in their applications before the 11th of February last, but for those who desire to plant next spring the lists will be open until February 1st, 1889.

The State appropriation for the expenses during the current year of the Department of Parks and Gardens in the City of Berlin amounts to 159,278 marks—about \$40,000.

The official report of the wine production of France during the year 1887 shows a total result of 24,333,264 hectolitres. This is a falling off of three and one-half million hectolitres as against the year 1886, and is less than the average production of the last ten years taken together. The chief cause of decline is attributed to the increasing ravages of mildew and the Phylloxera, although certain western and southern departments had also to contend against disastrous weather. From Algiers, on the contrary, the report is encouraging, a notable increase being shown both in the extent of land planted with the vine and in the amount of wine produced. The cider harvest in France was also a good one, more than 5,000,000 hectolitres being produced in excess of the production of the year 1886.

Retail Flower Markets.

NEW YORK, June 29th.

The Rose crop of this locality has been demoralized by the protracted heat. Hybrids are small, colorless, and loose-petaled. American Beauties have been less affected, and La France are fine. A few Gen. Jacqueminots are arriving from Newport, and sell for from \$1.00 to \$1.50 a dozen. Marechal Neil Roses are scarce and small. They cost \$1.00 a dozen. Catherine Mermets continue poor and are 75 cts. to \$1.00 a dozen. Niphetos and Brides cost \$1.00 a dozen, and fine Mde. Cuisins the same. Perles and Souvenir d'un Ami bring from 75 cts. to \$1.00 a dozen. Hybrid Roses cost from 25 cts to 30 cts. each. Puritans bring from 15 to 25 cts. La France are \$1.50 and \$2.00 a dozen. Orchids cost 50 cts. a flower for Cattleyas, and 10 and 20 cts. a flower for Oncidiums. There are from 15 to 60 flowers on a spray of the latter species. Gladioluses are 10 and 15 cts. each. Peonies grow scarcer and bring 10 and 15 cts. each. Lily-of-the-Valley from Newport arrives in small lots. It is 75 cts. a dozen. Carnations bring from 35 to 50 cts. a dozen. Longiflorum Lilies and Callas cost 20 cts. each. Pea blossoms bring 25 cts. a dozen, and Heliotrope and Mignonette 50 cts. a bunch. The latter is very slender and ragged. Smilax costs 50 cts. a string and 40 cts. a yard. Field Daisies are 25 cts. a dozen. Moss Roses bring \$2.00 a dozen. They are so fully open that they can no longer be classed as "buds."

PHILADELPHIA, June 29th.

The very hot weather which prevailed during the latter end of last week seriously affected the flower trade, and, even during this week, which is somewhat cooler, the demand is very limited. Transient trade is done only in the early morning or late in the afternoon. Amongst Roses American Beauty is superior to any other. Prices for Roses vary very little from those reported in last issue—which may, in short, be stated from 50 cts. to \$3.00 per doz. Sweet Peas still continue to be in demand, at 25 cts. per doz. The Cornflower sells at the same price; the blue variety being most in demand. The only notable feature in novelties is in varieties of Coreopsis, which sells at 25 cts. per dozen. Water Lilies (*Nymphaea Odorata*) are plentiful and also cost 25 cts. per doz. Carnations are still obtainable at 25 cts. per doz. Smilax costs from 40 to 50 cts. per string. *Asparagus tenuissimus* is in fair demand at from 50 to 75 cts. per string. Ferns, especially *Adiantum cuneatum*, are often asked for and sell at from 25 to 35 cts. per doz.

BOSTON, June 29th.

There is very little to be said about the cut flower market at the present time. Out-door Roses are just at their height and crowd everything else to the wall. On the street corners everywhere one sees great banks of Jacqueminots, Luizets and Hybrids in variety which are offered at five for 10 cts. Indoor Roses are very poor. The growers do not make any effort to produce good Roses under glass now, and many of them have cleaned out their houses and planted their young stock for next season's business. White Roses are still in demand, but there is nothing of the kind in the market worth buying. Carnations are abundant, cheap, but of inferior quality. Pink Pond Lilies sell well at \$3.00 per dozen. Lily-of-the-Valley is offered in best quality at \$1.50 per dozen. Gloxinias of glorious color and form are \$1.00 per dozen. These are especially effective for basket work, but as cut flowers also they are very desirable. Mountain Laurel, which is just in flower, is used extensively in large decorations.

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Farmers and Forestry.

MR. A. C. GLIDDEN communicates to the *Rural Home* some sound advice to farmers in regard to their wood-lands, and very forcibly points out some of the harmful falacies in regard to forestry, which now too often find a place in periodical farm literature. A great deal of injury has been inflicted upon the material prosperity of this country by irresponsible utterances of writers and speakers upon subjects relating to forestry, and farmers especially have come to look with suspicion upon any advice in regard to the care of woods and wood-lands. Such articles, therefore, as the one we have referred to, in which the facts are plainly and forcibly stated that the planting of trees upon farms will not increase the rain-fall, and that trees, like other products of the soil, must be cut when they reach maturity, cannot be too often written or too carefully read. We cannot, however, endorse Mr. Glidden's statement that there is less and less demand each year for timber and that other materials are replacing it. Statistics show a wonderful increase in the amount of timber consumed in this country, and while the price of poor, half-grown, brash or knotty timber of all sorts, and of inferior fire-wood, has diminished in some parts of the country, good material of certain varieties of lumber have advanced in price in a remarkable manner. This is true especially of the high grades of white pine, of black walnut, hickory, cherry, white ash, and of other choice hard woods. The prices which these woods now command show that they are becoming scarce, and indicate clearly in what direction farmers can increase the value of their properties by a little systematic attention to trees and their cultivation. This is especially true in the case of farmers living in parts of New England and of the Northern and Middle States, where the soil is of a character which makes the cultivation of trees its only profitable employment. Much has been said about the decadence of New England through the abandonment of its farms, but in all New England there is not an acre of good land really suitable for tillage, which, once cultivated, has been

allowed to run to waste again. What has so seriously injured New England agriculture, and brought agricultural ruin to its people in many towns, is, that land, which was only fit to produce trees, and which, if managed with the wisdom of true economy, never would have been stripped of its forests, has been cleared. This has often been done at great expense, and then at the end of a few years of unprofitable cultivation, such land has had to be abandoned. And what was true in New England a century ago, later, and in a greater degree even, has been true in northern New York; and to-day the same wasteful and short-sighted system is working incalculable mischief in Michigan and in other western States.

The profitable use of lands in the eastern States which cannot be cultivated to advantage is a problem which the farmers sooner or later must solve. Our agricultural population cannot always continue to go west; the best land west of the Mississippi has been occupied, and not an inconsiderable portion of it has already been greatly injured by thoughtless methods of cultivation. As population increases it must depend more and more upon the soil east of the Mississippi for its support; and the prosperity of the country will be great or small as this soil is used wisely or wastefully.

It is a well established principle in countries where the science and the practice of agriculture are much better understood than they are in the United States, that all land suitable for tillage shall be cultivated and that all land which cannot be profitably tilled shall be covered with trees. No tree is allowed to interfere in the arable land with the best development of its field or garden crop; and the poor soil is planted again as soon as a crop of trees has been taken from it. The boundary between farm and forest is rigidly drawn and strictly guarded.

A German farmer would as soon allow his cattle to range in his wheat fields as in his forests, which often prove the most profitable part of a European estate. In this country the wooded part of the farm is not cared for nor protected in a way to maintain and increase its value; it is always used as a pasture in spite of the well known fact that cattle are fatal to a forest; the trees are either all cleared off at once, without reference to their reproduction, or are so carelessly selected for cutting that the character and composition of the woods are ruined. More care is taken now than formerly to prevent and check fires in the woods, but the damage done to forest property in this country by fire is still an alarming item in the national waste account.

No system of agriculture can be long successful and profitable which ignores the necessity of cultivating trees, and which does not recognize the fact that much land in every country can only be made profitable by means of trees. The precepts which should be often repeated to farmers are not that trees produce rain or that trees are sacred objects, which cannot be cut without offense to man and nature. The lessons they must learn, if they hope to compete with the farmers trained under more enlightened systems of agriculture, are that sterile, rocky, hilly ground cannot long be tilled profitably; and that such land can only be wisely used to produce trees; that the pasturage of domestic animals in woods or on land only suitable for the growth of trees, is an expensive and wasteful system, as unsatisfactory from a pastoral point of view, as it is fatal to the forest; that trees are as much out of place in the strong level lands really suitable to permanent tillage as cattle are out of place in the woods. And they must learn, too, that wood-lands can only be made profitable when the same care is given to the selection of trees with reference to soil and climate as is bestowed upon the selection of grain and other crops, and that the rules which Nature has established for the perpetuation of forests must be studied and obeyed.

The belief in the value of forests is increasing in this country; and there has been a marked change in this respect during the last ten years. It can hardly be expected,

however, that the discussion which this interest has evoked will bring practical results to American farmers until they learn the lesson, which experience alone can teach, that much of their want of success in farming can be traced to the use they have made of the natural conditions with which they have found themselves surrounded.

The Artistic Aspect of Trees. II.—Texture.

ONE thing to be considered when a tree is viewed from the artistic standpoint is its form, which, as we have explained, means its size, its contour, and the character of its surface as determined by the number and disposition of its branches and the consequent massing of its foliage. Another thing to be considered is its texture. By this we mean the character of its masses of foliage as determined by the manner of growth of the lighter spray, and the profusion, shape, disposition and tissue of its leaves. We know what differences of texture—of real or apparent solidity and of surface effect—may be produced, for example, by different methods of weaving silken threads—resulting now in silk, now in gauze, now in satin and again in velvet. Analogous differences nature produces in the weaving of the leafy coverings of her trees; and they play almost a greater part in determining the effect of these trees than even varieties of form. If, for example, a Spruce and a White Pine were exactly the same in contour and in the disposition of their foliage into masses, the longer leaves of the Pine and their arrangement in clusters instead of in rows would give it a wholly different effect because a wholly different texture, while the feathery spray and leafage of a Hemlock would appear quite distinct from either. Even between trees of the same genus, as between different species of Pine, very different textures are produced by variations in the length, the rigidity and the number of their leaves. With deciduous trees the case is the same. An infinite variety of texture is found even among species closely allied with one another, and, when leafless, very similar in effect. Leaves may be large or small, numerous or comparatively few, clustered or scattered, held erect or horizontally, or in a drooping manner; they may have simple outlines, or be conspicuously cut or toothed or lobed; may be thick or thin, stiff or pliant in tissue; may be smooth or rough or shining of surface. A variation in any one characteristic greatly alters the general aspect of the foliage, and as there are so many characteristics which may be combined and recombined afresh, it is not strange that Nature's weaving process should result in innumerable varieties of texture.

Upon these varieties depends the expression of a tree, quite as much as upon varieties of form or varieties of color, unless, indeed, color be so peculiar as to be no longer green and form so eccentric as to be hardly normal—as in the case of fastigiate or weeping trees. A tree is sturdy-looking or graceful chiefly by reason of its form; but such varieties in sturdiness as may be expressed by the words severity, sombreness, majesty, picturesqueness, and such varieties in grace as may be expressed by the words fragility, weakness, delicacy, lightness—these spring in very large part from the texture of its foliage. Small leaves, and especially those which are small and elongated or small and quivering, do more than light color to give a tree the aspect of fragility and a feminine kind of grace, while large and simple leaves almost of themselves imply a masculine air, and large, simple and thick-textured leaves mean a certain majesty even in a plant so small that it is considered a shrub. A small Magnolia, for example, has more dignity than the largest Honey Locust. A Catalpa is more masculine-looking than a Willow of even the largest size; and if we imagine the thin tissue of its leaves exchanged for a thicker, stiffer tissue, we can easily see how its dignity would be still further increased. Even the difference in substance between the foliage of the American and the European Beech—the latter being some-

what stiffer and much glossier—makes a difference in the expression of the two trees; and there is a great contrast in expression, despite much similarity in form and structure, between the White Oak, with its large, round-lobed, dull-surfaced leaves, the Scarlet Oak, with its deeply cut and glossy leaves, and the Willow Oak, with its very small and simply outlined and still glossier leaves. A uniform texture—caused by comparatively small leaves, regularly and thickly distributed over the branches—gives a tree a quiet, restful look, while a broken, spotted texture, caused by sparse, scattered and conspicuously cut leaves (as in the Sycamore), gives it an unquiet look.

All such facts, the "commonplaces of the landscape gardener," should be noted and appraised by every one who aspires to merit the title of a lover of trees. There are none richer in possibilities of pleasure to the cultivated eye even if actual work in the way of planting is not in question—for while forms vary much in trees and colors vary much, textures vary more; among smaller woody plants individuality chiefly depends upon them; and while their variations may seem less striking than those of form and color to the careless observer, they soon grow to be equally conspicuous with the growth of the observing and the appreciating faculties.

When planting is in question, however, they are of great importance. It is almost as bad to group trees inharmoniously with regard to their textures as with regard to their forms. Any artist would know that trees which are quiet and restful in effect may be used in larger masses, and will less conspicuously affect the appearance of their neighbors than those which are spotted and restless of aspect. He would know, too, that it is better to relieve a light and feathery tree against a group of more solid foliage than to reverse the terms of the combination. He would know that the massive, uniform surfaces which make a good background are less pleasing in an isolated specimen standing near the eye. He would know that the great, glossy, leathery leaves of the Evergreen Magnolia are just what is wanted in one spot, just what is not wanted in another, and that while the trembling leaves of the Aspen, or the drooping, fringe-like texture of the Cut-leaved Birch, unfit it for many positions, they make it especially valuable for others. He would know that with every change of position and environment comes a change in the effect of the texture of a tree—that while one sort will look well in full sunlight, another will look better in a shadowed spot, another overhanging a stream, another set close against the walls of a house. An artist feels all this in advance if his profession be landscape gardening; and he feels it at least in intelligent appreciation of existing results if it be some other branch of art, for it is every artist's habit to appraise all he sees for the three properties of form and texture and color. But how few amateur planters feel it in advance; how few lovers of trees judge their own or their neighbors' places with such tests in mind! Even when questions of form and of color are somewhat regarded, questions of texture very seldom are. Yet a cultivated eye is as much distressed by seeing a rigid-looking Pine or a solid Sugar Maple where a feathery Hemlock or a delicate Honey Locust might better stand, as by seeing a Purple Beech where harmony calls for a green one, or a lofty Hickory where good composition demands a low and spreading Dogwood.

The trees in the Central Park, in this city, have not looked as well as they do just now for a number of years. The cool, late spring, the abundant rains of May and the heat of the early summer have all been favorable to a vigorous and healthy tree-growth. Most of the trees, with the exception of the half-dead Norway Spruces, which are covered with red spiders, are unusually free of insect pests. The American Elms have made a remarkable growth, and when planted under favorable conditions, are now objects of great beauty. The American and European Lindens are

very fine, too, and several species are now covered with their fragrant flowers. The two Silver Lindens (*Tilia argentea* and *T. petiolaris*) are striking and attractive in habit and in the pleasing color of their foliage. No foreign trees are better entitled to a place in our plantations than these two European Lindens, of which many fine specimens exist in the Park. The six thousand trees which have been removed from the Park during the past year are not missed. The work, as far as it goes, seems to have been judiciously planned and executed. No one would now suspect that a single tree had been cut; and the Park plantations and the general appearance of the Park would be immensely improved if thirty or forty thousand trees were removed during the present year. They would no more be missed than those already cut are missed. Dying Conifers still disfigure the Park in all directions; everywhere fine trees are in danger of being ruined from overcrowding, while the removal here and there from the plantations of inharmonious elements, as where, for example, trees with light and feathery habit are too closely associated with round-headed, compact trees, would add immensely to their natural and harmonious appearance. There are cases, too, where trees of peculiar rarity or interest should be freed from encroaching neighbors, that their full development and long life may be insured. This is the case with the Asiatic Elm (*Ulmus parviflora*), which stands near the Seventy-second street entrance from Fifth Avenue. This is without doubt the largest and finest specimen of this rare tree in the United States. It is a specimen not only of extraordinary interest, but of great and peculiar beauty. It now forms one of an inharmonious group of three trees. On one side it is being pushed out of shape by a common Tupelo or Sour Gum tree, while its branches on the other side are stunted by a common European Maple. It is hard to imagine a more incongruous or less pleasing combination of trees; and it is clearly for the interest of the Park and of the public that the Maple and the Tupelo should be cut away and that every opportunity should be given to the Elm to spread its branches out freely in all directions. There are hundreds of just such cases all over the Park where interesting and valuable trees are being ruined in this way; but in the particular case to which we venture to call the attention of the Park authorities, the prominent position of this beautiful tree and the great interest which it excites among all persons who know it, seem to warrant us in urging prompt action to insure it from further disfigurement.

Palms in Central Florida.

PROBABLY in all the United States there is not such a collection of Palms growing in the open ground as that of Mr. E. H. Hart at Federal Point, Putnam Co., in this State. Dr. Richardson, of New Orleans, has a good collection of hardy Palms growing in the open ground, but the extremes of cold experienced there are much greater than those of Mr. Hart's location, and only the most hardy species can be safely planted out.

The approach to Mr. Hart's residence is through the Orange grove, famous throughout the South for the number and excellence of the varieties of fruit grown, and containing between the Orange trees hundreds of the choicest exotic fruit trees, flowering and ornamental shrubs and Palms in the greatest variety. It is of the Palms more especially that I now wish to speak.

Overlooking masses of *Magnolia fuscata*, *Rhinospermum jasminoides*, *Olea fragrans*, *Azaleas*, *Tabernamontana*, *Allamanda*, and other beautiful plants, one's attention is first attracted by a group of different species of the genus *Phoenix* in front of the house. The tallest of these is a magnificent specimen of *P. sylvestris*, the wild Date of India, with a trunk some twelve feet in height and a total height of twenty feet. (It must be remembered that none of Mr. Hart's Palms have been planted out more than fifteen years, and most of them during the last ten years, so that in many species stem development has not even begun.) This beautiful tree had bloomed, and a spike of fruit was developing at the time of the extreme cold of 1886; this, of course, was destroyed, and no flowers have appeared since. Close by is a *Phoenix Canariensis*, with a short

trunk, and still more elegant leaves than those of *P. sylvestris*; the leaflets are set closer together, making a very compact and beautiful leaf. Another specimen, though smaller, is *Phoenix vivifera*, a more tender species, which suffered badly during the winter of 1886, but is still a very handsome and thrifty plant. Among the Orange trees are two elegant plants of *Phoenix rupicola*, a most graceful species. The handsome recurved leaves are a rich golden-green color rarely seen in any Palm. These plants are about five feet in height, this species never forming a tall trunk. There are other fine specimens of the different species of *Phoenix* in different parts of the grounds, especially in what was once the garden, but is now a thicket of Palms. We noted also *Phoenix tenuis*, *P. pumila*, *P. farinifera*, *P. Senegalensis*, *P. spinosa*, *P. reclinata*, *P. dactylifera* (the common Date Palm) and others. In striking comparison with the vigorous, healthy and remarkable growth of the various species of *Phoenix*, we remember a tiny plant of *Copernicia macroglossa*, ten years old, and with one little leaf, not more than an inch high.

Directly in front of the house is a clump of the slender little Cane Palm (*Rhapis flabelliformis*). The stems of this miniature Palm are about three-fourths of an inch in diameter and two or three feet high. It suckers freely like a Bamboo, and the clump now contains fifty or more distinct stems. This plant was little injured by the cold of 1886, and is ordinarily quite hardy.

The neat, trim little specimens of *Chamærops* throughout the grounds are very beautiful. Among these are *C. spinosa*, *C. Humboldtii*, *C. arborea*, *C. elegans*, *C. tomentosa*, *C. Martiana*, *C. Fortunei*, *C. humilis*, *C. Sinensis*, *C. farinosa*, *C. humilis robusta*, *C. robusta*, *C. excelsa*, *C. excelsa macrocarpa*, our native *C. hystrix* (or *Rhaphidophyllum*) and others. One of the largest of these is *C. robusta*, which has reached a height of six feet, with a trunk three feet high. Many of them have beautiful little silvery leaves and small slender trunks from three to five inches in diameter. All are perfectly hardy in this latitude, so far as cold weather is concerned, but *C. humilis* and one or two others do not, while small, support our summer sun very well. *C. excelsa* has rich green leaves, without the silvery tint so often seen in the other species.

Among other Fan-leaved Palms is a splendid collection of *Sabals*. These are usually hardy; even the species whose native home is in the tropics. One magnificent specimen of *S. umbraculifera* has attained a height of about fifteen feet, with over six feet of trunk. It has a beautiful spreading crown of leaves resembling those of our native *S. Palmetto*, though with longer and stouter petioles, and thicker, firmer texture. A specimen of *S. dealbata* is about six feet in height. This has produced seed on a spike ten feet high. There is a fruiting specimen of *S. longipedunculata*, with the flower-spikes extending far above the leaves after the manner of *Sabal Adansonii*. A fine specimen of *Sabal Mocini*, from the highlands of Mexico, has proved somewhat more tender than the native Cabbage Palmetto, the foliage having suffered in 1886. There are in this collection also *Sabal Havancensis*, *S. Ghiesbreghtii* and *S. caruleus*, all in good specimen plants.

Mr. Hart has made a great success with *Washingtonia robusta*, one of the California Fan-Palms, of which he has several fine trees. The largest is fifteen feet in height, with about six feet of trunk; it throws out a new leaf every two weeks, and is indeed a beautiful specimen; the red wax-like spines and richly-tinted leaves and petioles make it one of the handsomest and most desirable Fan-Palms I have ever seen. *Washingtonia filifera* (*Brahea* or *Pritchardia filamentosa*), the southern Californian Palm, is very distinct. Although Mr. Hart has beautiful specimens, they are deficient in vigor as compared with those of *W. robusta*. *Brahea edulis* and *Brahea glauca* are represented in smaller specimens.

Perhaps the most elegant Palm in the whole collection is a ten-year-old *Diplothemium campestre*. It is not more than four or five feet in height, but the beautiful plume-like leaves, silvery on the under side, and the leaflets delicately curled like those of an ostrich feather, make up in beauty for want of size.

The genus *Cocos* is well represented in the more hardy species; a specimen of the quick-growing and handsome *C. flexuosa* is twelve feet high; the most hardy species, perhaps, of all pinnate-leaved Palms, *C. australis* and *C. campestris*, are represented by many thrifty young specimens. *C. Yatai*, *C. insignis*, *C. Romanzoffiana*, *C. Normanbyana*, *C. Gaertneri* and *C. Blumenavia* are represented in small specimens; *C. plumosa*, a species with long, drooping, light-green leaves, appears in a good-sized specimen.

I noticed a small plant of *Livistona altissima*, another of *L. Jenkingsiana*, and a splendid specimen of *L. Hoogendorpii* four or five feet high. In front of the house is a magnificent

specimen of *L. Chinensis*, about eight feet high, that has formed a considerable trunk already. Near by is an *Acrocomia selerocarpa* about four feet high, raised from a seed planted eight years ago, and which did not germinate for four or five years.

A *Fubaa spectabilis*, twelve years old and not over a foot high, though apparently healthy, seems to warrant the assertion that in Chili, its native country, this Palm is one hundred years old before it produces flowers and seed.

Areca rubra, *A. sapida* and other species of this genus are grown with the protection of a shelter made of slats placed several inches apart, in order to afford partial shade and protection from frost.

A good specimen of *Oreodoxa regia*, the "Royal Palm" of southern Florida and the West Indies, has been protected through several severe cold snaps by headless and bottomless barrels slipped down over the leaves and around the trunk, and then filled up with earth.

Many other Palms are represented in small specimens, but I have noticed most of those that have attained any size.

Cycads, too, are well represented. First and foremost there is a noble specimen of *Cycas revoluta*, about fifteen years old, and in the healthiest possible condition. Scattered in various places throughout the grove and grounds are at least as many as a hundred more small specimens of the plant. *Zamia integrifolia*, our Florida species, is there, as well as the rarest exotic species, like *Macrozamia cylindrica*, *M. Dennisonii*, *Dioon edule*, *Cycas circinalis*, *Macrozamia terrestris*, etc.

In a few years the "Palms of Federal Point" will be well worth a long journey to see.

Manatee, Fla.

P. W. Reasoner.

Foreign Correspondence.

London Letter.

IN my last letter I spoke about the many beautiful American trees and shrubs that were now making our open-air gardens so gay with bloom. I ought to have finished the list by recounting the charms of the numerous Oriental plants which enrich English gardens. Chinese and Japanese trees, though not so hardy and so suitable for our climate as American, are, nevertheless, invaluable, and if some of them are killed in a severe winter, the choice is so great that we can afford to leave aside the tender things in making a selection. Just past is the glorious Yulan (*Magnolia conspicua*), which has been the attraction of many a garden, and this year, owing to the lateness of the season, it has been more beautiful than ever, having escaped the late frosts and cold winds. Of the several forms of it there is none to equal in purity the snow-white form, whose flowers have not the faintest trace of color. A large mass of this was exhibited at the Royal Horticultural Society a short time ago, and though surrounded by the rarest and showiest Orchids and other plants, every one who saw them was captivated by their chaste beauty. Quite recently I saw at Mr. Anthony Waterer's nursery at Woking a large bush of another white eastern Magnolia (*M. stellata* or *M. Halleana*, as it is also called). It was standing out in the open entirely without shelter, and every bloom was as pure as if grown under glass. These two Magnolias are among the loveliest trees one can possibly have in a garden. The *Exochorda grandiflora*, otherwise called *Spiræa grandiflora*, from north China, is a shrub that is rapidly becoming popular with us since it has proved to be quite hardy. At one time it was always planted against a wall, but now one sees great bushes of it eight or ten feet high and as much through. The snow-white flowers, an inch or more across hang thickly wreathed on every branch, and, in contrast to the tender green foliage, are delightful. The Japanese Apples have been exceptionally fine this season. I do not know if they are much planted in America, but here there is such a growing demand for them that nurserymen cannot keep pace with the supply. The best of all is undoubtedly *Pyrus* (*Malus floribunda*), and one of the finest of all flowering trees. The profusion of its flowers and buds renders it most striking at this season, especially before the deep crimson buds expand into shades of deli-

cate pinks. I plant this beautiful tree wherever I can, knowing well how hardy it is, and how rapidly it makes a picturesque, though small, tree. In old gardens like Kew, the Chinese *P. spectabilis*, a very old introduction, has been very attractive in bloom, but it is not nearly so valuable for ornamental planting as *P. floribunda*, neither are the varieties *Toringo*, *Kaido*, *Riversi* and *flore pleno*, which I put in the same category as the Siberian *P. baccata*, which has the additional value of its cheerful crop of autumn fruit. *Pyrus Maulei* is one of my chief favorites among dwarf shrubs. Its flower color, a sort of orange red, is incomparable, and just now, when this peculiar tint is in harmony with the pale leaf green, the shrub is charming. It is admirable for planting on the margin of a group of our old friend, *Cydonia japonica*, on a lawn. By the way, there are some splendid forms of the *Cydonia* now, but after seeing a full bloom review of them at the Knap Hill nursery, I think that there is none to compare in richness or brilliancy of color with the sort called *cardinalis*, whose flowers are big, of fine shape and of a glowing crimson. Then for purity, the variety *nivalis* is unmatched, being far better than the so-called white (*alba*), which has traces of color. All the other sorts, so far as I can see, range between *cardinalis* and *nivalis*, and the only one I should select besides them would be *rosea*.

The Japanese Snow-ball bush (*Viburnum plicatum*) deserves all the praise you see written of it, for it is unsurpassable in its way. I saw it the other day in the Coombe Wood nurseries flowering profusely in an exposed border, every bush being a mass of white. The "balls" of flowers are larger than those of the common *V. Opulus sterilis*, and whiter, while the plant is dwarfer, and particularly suitable for a select shrubbery. I have recently seen the double *Wistaria sinensis*, and do not think much of it compared with the glorious single kind, which for the last few weeks has met me at every turn on mansion, cottage and bower, clad with a profusion of mauve bloom. The double kind is not so showy, because the flowers seem doubtful about opening themselves widely, and though when fully expanded they may last longer, in good condition, than the single, I do not think that that point compensates for the lack of profuse bloom, brightness and elegant growth. When I was in Belgium recently I heard some nurserymen discussing the merits of a new variety of *Wistaria* which is "coming out." It is said to be wonderful, far eclipsing the long-spiked *W. multijuga* and other sorts, its racemes being a yard long. I shall watch its advent with interest.

London, June 8th.

W. Goldring.

New or Little Known Plants.

Philadelphus Coulteri.

PROBABLY no flowering shrub is more popular with common folk, after the Lilac, than the "Seringa," especially the European form (*Philadelphus coronarius*), with creamy, fragrant flowers. Our own species, with larger, pure white flowers, but much less fragrant (*P. grandiflorus* and *P. inodorus*, with their varieties), are also favorites, and very common in yards and shrubberies. Others are scarcely known. The Californian *P. Gordonianus* is sometimes to be found in gardens, and it has large flowers and is very handsome in cultivation. The very similar *P. Lewisii*, which ranges from Oregon to north-western Montana, is a free bloomer, and probably its equal in every way. The two species of western Texas and New Mexico, *P. microphyllus* and *P. serpyllifolius*, are dwarf in habit and have much smaller leaves and flowers.

The species of which a figure is here given, is from northern Mexico, where it was discovered by Coulter many years ago, and again by Professor Sargent in 1887 on the foot-hills of the mountains near Monterey. It equals our common species in height, with slender, drooping branches, and leaves which have a dense, white pubescence cover-

ing the under surface. The flowers are mostly solitary along the branches, an inch broad or more, and very fragrant.

The relationship of the genus *Philadelphus* is interesting enough to be worth mention. With *Hydrangea* and *Deutzia* it belongs to a saxifragaceous tribe (*Hydrangeæ*) which is limited to the northern temperate zone and mainly to eastern Asia and eastern North America. *Philadelphus* is exceptional in having one species in Europe and two upon the Pacific coast, in addition to the eight more eastern species and the two of eastern Asia. *Hydrangea*, on the other hand, has but three species in eastern America and thirty or more Asiatic, while *Deutzia* is wholly Asiatic. The remaining genera are all very small, of a single species, or rarely two in each. Of these we have *Decumaria* in the Atlantic States, *Fendlera* and *Jamesia* in the Rocky Mountains, *Whipplea* in Utah and California, and *Carpenteria*, also Californian. One genus is found in the Sandwich Islands, and the five others all belong to eastern Asia. It is a curious fact that the *Itea Virginica* is our sole representative, and almost the only representative on this Continent, of another similar and as large a tribe whose home is in the southern hemisphere, scattered likewise

two feet more and the color is brilliant golden yellow. We are accustomed to see *Papaer orientale* in several shades of scarlet and blood red, but there is now a sport in rosy lilac. *Lathyrus Sibthorpi* is not a new plant, but it is seldom seen and it deserves a place in a choice collection. Its flowers are of a uniform, bright magenta-red and appear in great numbers. *Gundelia Tournefortii* is a rare Persian plant, not showy, but a great beauty; the thistle-like leaves are deeply cut out, rather spiny, of a bright green color with conspicuous white nerves; the flowers are chocolate and yellow, a very curious combination, but most striking. *Lindelofia longifolia* is a showy herb, sending up a dozen stems to a height of two feet, each clothed by numerous lance-shaped leaves and terminated by a cluster of ultramarine blue, Forget-me-not-shaped flowers. *Pulmonaria Daurica* is a dwarf alpine; a tuft of lance-shaped leaves mounted by panicles of pretty bright blue pendent flowers. *Polygonum sphaeroslachyum*, a showy plant from Sikkim, continuously puts forth from amidst bright green, longish-lanceolate leaves, its charming rosy crimson flowers. *Armeria undulata* has pure white heads borne on long undulate stems. *Gladiolus vinulus*, grown in a frame, is a very pretty small-flowered species which will be much



Fig. 40.—*Philadelphus Coulteri*.—See page 232.

mostly in small genera through western South America, the islands of the South Pacific and Indian Oceans, Australia and South Africa. But *Itea* is the only genus of this tribe that is represented in eastern Asia also, and our own species finds its nearest relative in one peculiar species of Japan.

S. W.

Plant Notes.

Novelties at Baden-Baden.

A PART of the terrace-like rough walls in my garden is clothed in blue, violet and crimson-lake by the various varieties of *Aubrietia*, the crimson-lake-colored *A. Leichtlinii* being very conspicuous. *Iris albicans*, a native of Cyprus, is in the way of *I. Germanica*, but pure white, very rich, and deliciously sweet scented. *Delphinium Brunonis* is a dwarf, very large flowered Himalayan species; the flowers are grayish blue, very downy, and strongly musk-scented. *Eremurus aurantiacus* is one of the showiest species. The scapes are some three feet in height, the spikes of the thickly set flowers take one and a half to

valued for bouquets. It is creamy white with crimson feathers.

Max Leichtlin.

Schizophragma hydrangeoides.—This interesting Japanese climbing plant is now flowering finely in the garden of Mr. S. B. Parsons, at Flushing, Long Island. It must not be confounded with the "Climbing *Hydrangea*" sometimes seen in American gardens, which, although distributed under the name of *Schizophragma* a few years ago, is an entirely different plant (*Hydrangea radicans*), with dark green, finely serrate leaves, and broad, flat-topped inflorescence, the outer or radiating flowers, as in other *Hydrangeas*, with three or four enlarged, petaloid sepals. *Schizophragma* has much paler and more deeply heart-shaped leaves, with reddish veins and petioles, and a much deeper and more prominent serration. The flowers are arranged in a loose spreading, many-branched corymb six or eight inches across, each branch terminated by a pure white petaloid, oval leaf, nearly an inch long, corresponding to the petaloid calyx lobes of the ray-flowers in *Hydrangea*, but with only a single division developed, and with no other trace of the flower remaining. The small, perfect flowers are greenish yellow, and, although produced in great profusion, are not showy, the beauty of the plant consisting in its very handsome foliage, and conspicuous petaloid calyx lobes.

Schizophragma is found in the elevated valleys of the mountains of Japan, where it climbs over rocks and the trunks of trees to a height of eight or ten feet. The Japanese name, *Tsuru demari*, signifies the Climbing Snowball, a name which describes the general appearance of the plant. It is well figured by Siebold and Zuccarini in the "*Flora of Japan*," t. 26, while a figure, *Hydrangea radicans*, will be found in the *Botanical Magazine*, t. 6788 (under *H. petiolaris*). These two climbers are important additions to the small number of plants hardy here, capable, like the English Ivy, of attaching themselves firmly to the trunks of trees by adventitious roots developed on the stem and branches. S.

Benthamia Japonica is probably flowering for the first time in the United States in the Parsons nursery, at Flushing, Long Island. It may be described as a dwarf Flowering Dogwood, in which the flowers are not produced until after the leaves have attained their full size. It is a compact shrub, six or eight feet high, with bright green, elliptical leaves and compact heads of small yellow flowers, surrounded by four pure white, satiny, petaloid bracts as long, but much narrower, and more sharply pointed than those of the Flowering Dogwood. This is a very interesting and important addition to the list of showy-flowering shrubs, hardy in the Northern States, where it seems destined to become a conspicuous garden ornament. It is one of Mr. Hogg's introductions. S.

The Cherokee Rose.

IN extra-tropical regions with temperate climates it is the injurious weeds of foreign countries and not the useful or ornamental plants which, as a rule, become naturalized. A hundred old-world weeds, at least, injurious to our crops, are now as much established, and in some instances more widely distributed, in the United States, than in their own homes, while of plants useful to man there are not probably half a dozen foreign plants naturalized in this country. The most conspicuous examples of useful plants now thoroughly established in the United States are the Barberry on the New England coast, the so-called Japanese Clover in the south, the Oat in California, the Wild Orange in Florida, and the subject of our illustration on page 235, the Cherokee Rose (*Rosa laevigata*), now thoroughly naturalized and widely distributed through a large part of the south Atlantic and Gulf States. It is a common plant in many districts of southern China and Japan, but it is not recorded how the Cherokee Rose first reached America, in whose garden it was first planted, or how it escaped to the woods and took such a hold upon the soil that it acquired the name of the tribe of Indians which once occupied much of the upper country in what are now the States of Georgia and the Carolinas. Michaux, the French botanist, found it in Georgia late in the last century so thoroughly naturalized that he mistook it for a native plant and first published it in his North American Flora many years before it was known as a Chinese plant at all. Elliott speaks of it in his "*Sketch of the Botany of South Carolina and Georgia*," published in 1821, as having been "cultivated in the gardens in Georgia for upwards of 40 years, under the name of the Cherokee Rose." It is a shrub with long flexible branches which may be trained to a height of 15 or 20 feet, but which if left unsupported fall to the ground and take root. This habit, its vigorous, rampant growth, and the stout, sharp, incurved prickles with which its branches are armed, admirably adapt the Cherokee Rose to form high hedges, which, if left unpruned, soon form thickets twenty or thirty feet through, into which no animal will penetrate. There are hundreds of miles of such hedges lining the highways in different parts of the Southern States, and nowhere are they more beautiful and luxuriant than in that part of western Louisiana watered by the Achafalaya and the Têche. When in bloom the Cherokee Rose is an object of much beauty, its pure white, single, fragrant flowers, two or three inches across when expanded, contrasting charmingly with the dark, shining, ever-green foliage. There are few floral displays in this country more delightful than a long vista bordered with great masses of this graceful plant in full flower. The

Cherokee Rose is an excellent subject to train over the roof of a cool green-house at the north, where, if it can be planted out in a border, it soon attains a large size and produces every year during the month of February an abundant crop of flowers. Our illustration is from a photograph taken recently in Florida, by Dr. R. H. Lamborn; it shows a hedge of this plant from which the long pendulous branches have been removed in order to keep it within reasonable bounds.

Cultural Department.

Canterbury Bells.

OF these grand, old-fashioned flowers we now (middle of June) have a very fine display—some 150 plants in full bloom in one belt. Although single plants are very beautiful, their excellent effect is attained only when a large number of them are grown and massed together, like Pæonies, Poppies and Coreopsis. They come into bloom when herbaceous Pæonies and Oriental Poppies have passed their best, and before the gorgeous Kœmpfer's Irises begin to flower, and they are in perfection at the same time as June Roses, Deutzias and the large flowered Philadelphus.

Canterbury Bells are true biennials and of the easiest possible cultivation. We have never succeeded in flowering them the first year from seed, and although they will sometimes live over for another year after blooming, in the same way as Foxgloves and Hollyhocks, they never are satisfactory when so retained; far better treat them strictly as biennials. But they are not quite hardy, and this alone is the reason why they are so seldom seen or grown in our gardens. We sow the seed in flats (shallow seed boxes) in a cold-frame in June or July, and soon after the seedlings appear they are pricked off into other flats, and after a few weeks planted out six or eight inches apart each way into frames or a narrow bed in the open garden. Sowing in flats is a matter of convenience rather than necessity, as the seeds are very small, and if sown in the open garden warm sunshine would be likely to burn them, or heavy rains wash them out or cover them too deep. The cold-frame is also only a convenience in the same way, and by shading the sashes and ventilating at the same time, we have in it an excellent place for starting seeds in summer. It is not well to sow the seeds in spring; if sown early the plants grow into large masses before summer is over and are very apt to rot off in winter. Many years of practical observation convince us that midsummer is soon enough to sow Canterbury Bells.

Before hard frost sets in lift the plants and transplant them into cold-frames, in the same way as is done with Pansies, Violets or Lettuces, and, according to the size of the plants, some six to eight inches apart. If the plants are vigorous and leafy, shorten back the leaves a good deal so as to keep the plants from touching each other; when too close they gather and hold moisture on the surface of the leaves; and then the crowns rot off in winter. But avoid coddling or keeping them warm; just cover the glass with a few inches of straw and ventilate in bright or warm weather. But keep a strict watch on the frames for field mice. These little and extremely destructive rodents gather to the frames in winter and cut the plants all to pieces. A few Peas or grains of cereals, dusted over slightly with Paris green and buried half an inch deep in the ground, is a very good bait for the mice.

Towards spring expose the plants quite freely in order to render them hardy and retard their leaf growth, and as soon as the ground out-of-doors is free from frost and mellow lift and transplant them to the garden where it is desired to have them bloom. In lifting cut the ground between the plants lengthwise and crosswise, and in this way you can lift them with large unbroken balls.

There are many kinds of Canterbury Bells (*Campanula Medium*), single and double; also the cup-and-saucer forms known as calycanthea; and in color they range from pure white to rose and blue, but the shades of purple, violet and blue prevail. And while all are beautiful, the double ones are most esteemed, and of the doubles the *calycanthea* varieties are preferred. The finest variety we have ever grown is *calycanthea rosea*, and the next most beautiful is *C. Mauve Beauty*. But it is desirable to have a variety of colors, and from a packet of mixed seed of each of the above sections—namely, single, double and calycanthea—there will be a great variety of colors, but there should be a special packet of *calycanthea rosea* seed.

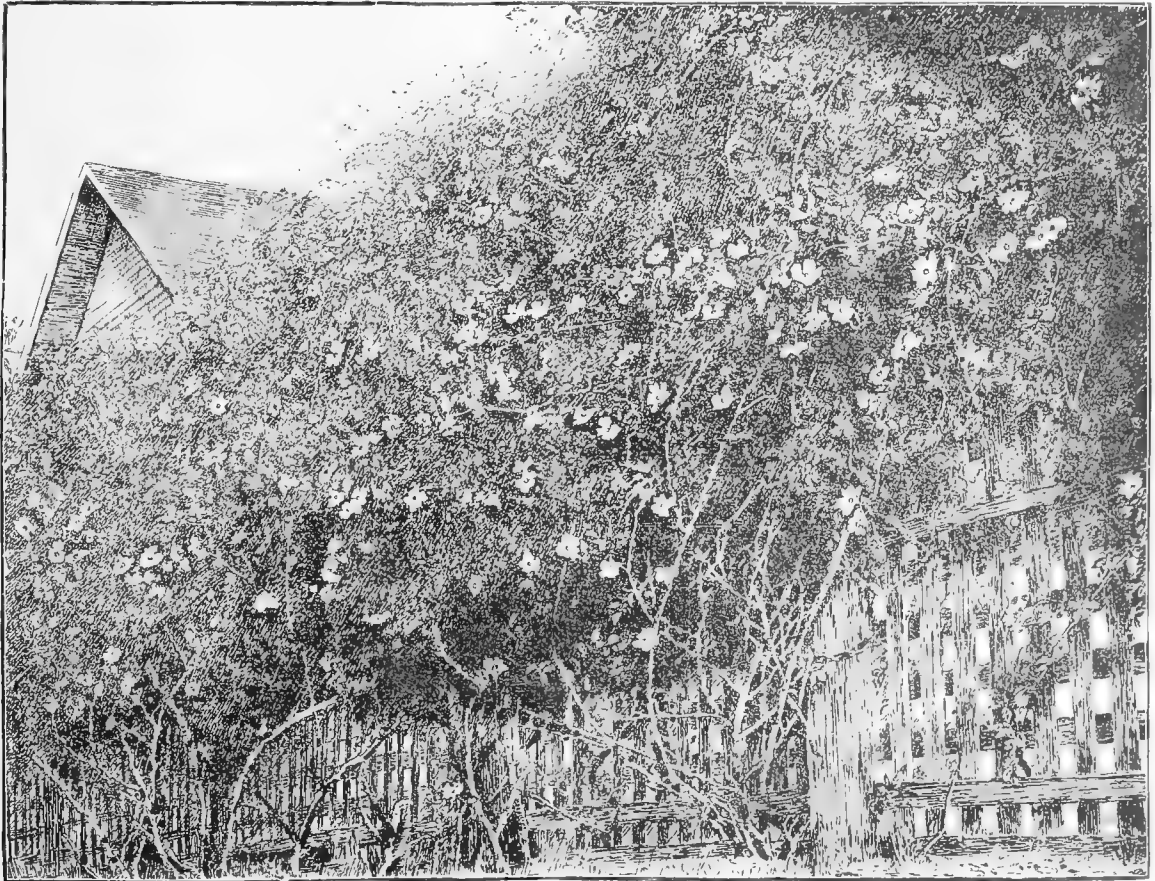
Canterbury Bells are not only most excellent plants for garden use, but as cut flowers for house decoration, where, as in the case of halls, large masses are required, we have nothing better, and they last well when cut. *W. F.*
Glen Cove, N. Y.

Myosotis dissitiflora.—Although this beautiful perennial Forget-me-Not does not come in early enough for spring bedding, owing to the loss of the previous year's flowering growth during winter, yet it does excellent service in brightening up the garden during the interval between spring and summer bedding. For the front line of herbaceous borders, and round and about shrubberies, as an edging, it is charming. It will bloom all through the summer, but later its brightness becomes somewhat obscured by the blaze of summer bedding plants. It differs from *M. alpestris*, which is really an annual—having the inflorescence proceed directly from the root-stock—by flowering, and rooting all along its decumbent stems, any of which quickly form a plant when separated.

species we are not all successful, though it is very plentiful in the woods about 200 yards away. The large and handsome *C. spectabile* will soon be in flower. This kind delights in deep beds of swamp peat and moss, in light situations. This, as well as the yellow kind, make excellent plants for pot culture, can be forced readily, and will remain in good condition for many years with simply an annual top-dressing of moss and peat. *F. G.*

Orchid Notes.

Thunia alba.—As more than half a century has elapsed since this Orchid was introduced, and as it is easily propagated, it is surprising that more of it is not grown. We have a large batch in flower now, and we find it exceedingly useful for cut flowers and for decoration, both for the conservatory and for the dwelling house. They can be had in flower within two months from starting, and to make a good plant for general decoration, eight or ten bulbs should be put into an eight-



The Cherokee Rose—See page 234.

Rockets.—The old double white and purple varieties are now in bloom. They are among the handsomest of hardy plants, and should be generally grown. The flowering stems resemble, and equal in beauty, those of a well-formed Brompton Stock, and remain in bloom much longer. They require only a good loam—if heavy so much the better—and a little shade. They are propagated by cutting back any flowering stems which may start towards the fall, in order to encourage the development of offsets, which should be removed and kept over winter in a cold-frame for safety.

Wellesley, June 16th.

T. D. Hatfield.

Hardy Lady Slippers.—One of the principal features of the out-door garden just now is several large patches of the yellow species of this interesting family. Some of these clumps are bearing seventy to eighty flowers. *Cypripedium pubescens*, the larger variety, does best with us planted in a friable loam in partly shaded ravines. On the other hand, *C. parviflorum*, the smaller variety, likes a good deal of peat, being a bog-loving kind, but disliking too much shade. One fine patch planted by the side of a gravel path has outgrown its bounds, and where it has encroached on the walk the flowers are smaller and lose the dark brown of the petals. A few plants of *C. acaule* are in flower, planted among Kalmias, but with this

inch pot. The bulbs or stems usually grow from two to four feet in height, and terminate in a drooping raceme of pure white flowers, beautifully penciled with purple and lilac. These will last in perfection from two to three weeks. To grow this species well it should be accorded very liberal treatment, potting in well drained pots in a mixture of equal parts loam, peat and moss with a good sprinkling of sand. Little water should be given until the growths are a few inches high, after which they may be kept very wet; a good top dressing of moss and cow manure will be beneficial, as well as liquid manure applied three times a week. The warmest house should be given them, and the plants should be constantly syringed overhead. As soon as growths are finished, the plants should be ripened in a cool, airy house, giving abundance of water until all the leaves are dropped; after this scarcely any water need be given except to keep the stems from shriveling. All the roots die every winter, consequently they will need to be shaken clean out, the old roots cut off and potted in fresh soil every spring, as soon as new growths appear. To propagate this species the stems, in the spring, should be cut in lengths of four to five inches and inserted in pots of equal parts sand and leaf mould, and put in a close frame until the buds are well advanced, when they may be treated the same as the older plants. There are three to four other species belonging to the genus,

but differing from this one only in the markings and color of flower, and requiring the same treatment. They are natives of Burmah.

Phalænopsis Parishii.—An exceedingly choice little Orchid with thick, fleshy roots and distichous tufts of pale green leathery leaves about four inches long. The racemes, which are large for the size of the plant, bear eight to ten flowers, less than an inch across, sepals and petals pure white, lip three-lobed, the lateral ones small, yellow, with purple blotches, the front one broad, flat, and of deep amethyst purple. It is an exceedingly free blooming kind; the smallest piece will produce at least two racemes, and the charming contrast of color, in the dense mass of flowers, renders it very attractive. It is a native of Burmah, and grows best on block or raft of wood. It should at no season be allowed to be dry, and delights in abundance of heat and moisture in the growing season.

Miltonia Phalænopsis.—This is the smallest of the half dozen species popularly known as Odontoglossums, but now referred to Miltonia. It has oblong, compressed bulbs, bearing narrow, grass-like leaves about a foot long. Strong bulbs will produce three to four spikes, each bearing three to four flowers, pure white, the broad pandurate lip having two large broken blotches of purplish crimson. This species is a native of Guatemala, and is thriving with us under the treatment recommended for *M. vexillarium*.

Phalænopsis speciosa Imperatrice is a distinct variety of a very showy species, producing panicles of bright rosy purple flowers, excepting a white tuft of hairs on the apex of the lip. The back of the flowers is faintly striped with rose. Another choice and rare variety is Christyana, in which the purplish flowers are banded with pure white. These, with the type, are native of the Andaman Isles, and therefore need the warmest house, and should at no time be allowed to become dry. Sphagnum moss, with a few lumps of fibrous peat, is the best potting material.

Denrobbium Dearei is one of the best of recent additions to this large genus. The racemes, usually eight to ten flowered, proceed from opposite the axils of the leaves or from the old leafless bulbs, in profusion, bearing comparatively large, pure white flowers, relieved with just a dash of pale green on base of lip. These will remain in perfection fully four months, and apparently without injury to the plant. The old bulbs, though adding nothing to the beauty of the plant, should be allowed to remain on, as they will continue to give racemes for many years. The cultural requirements of this species has not been generally mastered, as good examples are the exception. It does well in the warmest house the whole year, being saturated with water during growth, and at no time being very dry. It requires little potting material.

Kenwood, N. Y.

F. Goldring.

Notes from the Arnold Arboretum.

Ledum latifolium, the Labrador Tea, is now covered with its handsome heads of white flowers. It is a dwarf evergreen shrub, which grows in cultivation to a height of one or two feet, with erect, very leafy stems, and oblong, linear leaves with revolute margins and covered on the under side with ferruginous wool. An inhabitant of cold swamps, it is a peat-loving plant, and a good subject for the margins of Rhododendron beds. Although a plant from the far north, being found from Labrador to Puget Sound, like most broad-leaved evergreens, it is the better in this climate for a slight winter covering.

The Sand Myrtle (*Leiophyllum buxifolium*) is also in flower. It is a handsome dwarf evergreen shrub, only a few inches high, very common in sandy Pine-barrens from New Jersey to Florida. It has minute, oblong, veinless leaves, and profuse white or rose-colored flowers in terminal umbel-like corymbs, made conspicuous by the brown or purple anthers. The variety (var. *prostratum*) which is found only on the summits of the Roan and other high Carolina mountains, where it forms dense wide carpets, flowers here nearly two weeks earlier. It is hardly more than an inch high and has deeper green leaves than the New Jersey plant.

Among all the Mountain Ashes, American, European and Japanese, none is so handsome as *Pyrus sambucifolia*, the most northern of the American species and only just reaching the eastern United States on the highest of the New England mountains and the shores of Lake Superior. The oblong-oval divisions of the leaves are much broader than in the other species; the petioles and peduncles are a brighter red and the fruit is much larger and higher colored. It makes a fine tree in cultivation, especially far north; and in the gardens of

Minnesota and Wisconsin, where it is often seen and where it soon grows into fine large specimens, it is, in autumn, an object of surprising beauty. It is rarely met with at the east, however, although well suited to the climate of New England and New York; and its more general cultivation is worth the attention of nurserymen. It is in every way the superior of the European Mountain Ash, which is the species found in American nurseries.

Daphne alpina, a native of the European Alps, is very handsome when covered with its pure white, abundant, fragrant, sessile flowers. It is a dwarf shrub, not more than a foot high here, with deciduous leaves. It requires a slight winter protection to insure an abundant crop of flowers, as the plant is not entirely hardy here.

Fendlera rupicola is an interesting plant of the Saxifrage family, related to *Deutzia*, and a native of our Texano-New Mexican region, being found growing sparingly in the rocky crevices of river bluffs from the Guadalupe to New Mexico. It is a low shrub, two to four feet high, with small, opposite, entire, sub-sessile leaves, and large white, showy flowers with long, conspicuous stamens, solitary on the extremities of stout lateral branches. *Fendlera* is perfectly hardy here, and a real acquisition to the list of dwarf garden shrubs which can be grown in this climate.

Among Barberries with racemose flowers of the *vulgaris* section are several species or varieties in the collection worth more general cultivation. *Berberis Canadensis* is the only native representative of the family in eastern America. It is a graceful and very hardy shrub, a native of the mountains of Virginia and Carolina. It is in every way a smaller plant than *B. vulgaris*, which it otherwise closely resembles, except that the teeth of the leaves are less bristly pointed and the racemes are fewer flowered; the berries are oval, while in the European plant they are oblong. It is a perfectly hardy plant, which will grow wherever the common Barberry will thrive.

Berberis Sinensis, a native of northern China, is one of the most ornamental of the whole genus, especially when the fruit is ripe. It is a graceful plant, four or five feet high, with long, slender, flexuous branches, quite loaded at this season of the year with slender racemes of small yellow flowers. The leaves are small, spatulate or linear obovate and quite entire, or on young plants with scattered teeth; the fruit is the largest and most brilliant in color produced by any Barberry in the collection, while, unlike *Berberis vulgaris*, the foliage turns in autumn to brilliant orange and scarlet.

Berberis emarginata is a Siberian species, and one of the latest to flower in the collection. It has lanceolate-obovate, ciliate serrate leaves, and racemes of pale flowers. It is worth general cultivation for the beauty of its autumn foliage, which far exceeds that of any of the Barberries here in the brilliancy of its coloring. There is a very distinct variety of the common Barberry in the collection from Afghanistan, with stout erect branches, and spatulate leaves four or five inches long, borne on long, slender petioles; and another from Hakodate, in Japan, with bright coriaceous leaves, and pale flowers in semi-erect racemes.

Berberis umbellata, a native of the Himalayas, is a very distinct late blooming species, quite hardy here, and of no little ornamental value. The long, graceful, sparingly leaved branches are bright red, as are the slender three-parted spines, slender peduncles and pedicels. The peduncles are erect, three inches long or more and twice the length of the obovate-oblong, entire or slightly toothed, mucronate leaves, which are dark-green above and pale on the lower side; they bear near their summit a racemose umbel of long-pedicel, large, pale yellow flowers. The upright, umbellate inflorescence is quite unlike that of any other Barberry in the collection. *Berberis Cretica* is still later in bloom. It is a species from Asia Minor and quite hardy here. The drooping racemes of pale yellow flowers are rather shorter than the oval, entire or somewhat serrated leaves. It has stout, erect stems, three or four feet high, armed with short three or five branched spines, and soon forms a dense compact mass of handsome, dark-green foliage. It is well worth general cultivation.

Berberis concinna, a beautiful and very distinct little species, is also in flower. It was discovered many years ago in the Lachen Valley of the Sikkim-Himalaya, at an elevation of 12,000 to 13,000 feet, by Sir Joseph Hooker, who introduced it into cultivation, and who published a description and figure (t. 474) of it in the *Botanical Magazine*. It does not, however, seem very well known in gardens, and was not included by Lavalée in the catalogue of the plants in the *Arboretum Segretzianum*, or by Mr. Nicholson in his excellent "Dictionary of Gardening." *Berberis concinna* is a small, low bush, with erect or spreading bright red branches, one or two feet high, armed with

slender three-parted spines, and covered with small, spinulose-toothed leaves, one-half to three-quarters of an inch long, dark glossy green on the upper side, snowy-white and glaucous below. The pedicels are longer than the leaves, drooping, solitary and one-flowered. The flowers are globose, pendant and deep yellow in color. The fruit, which is described as large, oblong and bright scarlet, has not been produced here. *Berberis concinna* appears to be perfectly hardy here, a fact which would seem to indicate that many of the plants of the high Himalaya region may, with proper precautions in the way of protecting young specimens until they are fully established, be made to contribute to the beauty and interest of American gardens. This little Barberry is certainly a gem among dwarf flowering shrubs, and for the beauty of its foliage alone it should find a place in every rock-garden or on the borders of every shrubbery.

One of the most distinct and desirable of exotic Thorns is a north China and Magnolia species, *Crataegus pinnatifida*, common in the neighborhood of Peking and often cultivated by the Chinese. It is a variable plant, especially in the size and color of the fruit and in the character and amount of the pubescence on the leaves and young shoots. Here it is a small bushy tree, with dark green, shining, deeply cut and serrate, oval leaves, two to three inches long by half as much wide, borne on long, slender petioles. They are slightly rufous-hairy on the under side along the mid-rib and on the long slender pedicels of the large flowers. This species is handsome at this season, when the pure white flowers make a beautiful contrast with the rich shining foliage; but it is even more showy in autumn when it is covered with its large, scarlet fruit. This Asiatic Thorn is perfectly hardy here, and like all the north China plants which have been tried in the Arboretum, it seems admirably suited to the climate of the Northern States.

Caragana spinosa is a slender shrub, a native of Siberia, with handsome, yellow, pea-shaped flowers, and long, flexible, graceful branches, upon which the adult petioles, developed into long, strong spines, are persistent. The leaves with two to four pairs of linear, glabrous leaflets, and spiny stipules, are small, pale green and rather inconspicuous. This is a very hardy plant, recommended as a good subject to use in making dwarf impenetrable hedges, a purpose for which its long branches and long, stout thorns seem to well adapt it.

Caragana pygmaea and a variety with pendulous branches known as *C. pygmaea gracilis* are pretty little shrubs, one or two feet high, with slender spiny branches covered with small leaves composed of two pairs of linear, glabrous leaflets approximating near the end of the short petiole, and handsome large solitary yellow flowers. *C. pygmaea* is a native of Siberia and has long been known in gardens, although rarely seen in those of this country. It is perfectly hardy.

Syrax Americana is one of the most graceful of North American shrubs, and when the slender branches are covered with its drooping, pure white, bell-shaped flowers, borne in slender axillary racemes, few plants will compare with it in delicate beauty. It is rarely cultivated, however, and little known in gardens. Although a southern plant, not being found growing naturally north of Virginia, it is quite hardy here and blooms freely every year. It is a common plant along the margins of swamps and in low ground, where it reaches a height of from four to eight feet.

Attention has been called in earlier issues of these notes to the value of *Hudsonia ericoides* as a dwarf rock-garden plant. The second of our northern species, *H. tomentosa*, is equally attractive in the garden. It is a dwarf, hoary plant, only a few inches high, with narrow leaves, closely pressed and imbricated on the stems, very common on the sea-shore of the New England and Middle States and on the shores of the Great Lakes. Every morning during the blooming period of two or three weeks the plant is covered with a sheet of golden-yellow flowers, from which the petals fall by two o'clock in the afternoon, fresh flowers opening each day. This plant, like the other species, requires some care before it is thoroughly established in the garden, but once established, it will spread rapidly, and soon make a broad, handsome carpet.

Stephanandra (from two Greek words signifying crown and male, in allusion to the disposition of the stamens) is a genus of two or three Japanese shrubs, with the general habit and appearance of Spiraea, to which they are closely related. *S. flexuosa*, introduced a few years ago by the Messrs. Veitch, is the only species in cultivation. It has slender, flexuous branches, which here attain a height of three or four feet, with incised or lobed, cordate, ovate leaves, often colored with purple, and compound racemes of small white flowers. This is a graceful and handsome shrub, which is not very hardy,

however, here, even when carefully covered, and the stems are often killed back to the ground, but grow up again vigorously. It is now flowering on such stems as were not killed during the winter.

The Stagger-Bush (*Andromeda Mariana*), a native shrub, found along the Atlantic seaboard south of Rhode Island, in low, sandy, wet situations, and very common and covering extensive tracts in some parts of Long Island, is now in flower. It is one of the handsomest of the Andromedas. It attains a height of two to four feet, and has deciduous, rather coriaceous, and shining oval leaves, and large, pure white, bell-shaped, nodding flowers, in clusters, from axillary buds, crowded on the naked branches of the preceding year. The foliage of this plant is popularly supposed to poison browsing animals. It is easily cultivated, thriving best in deep loam mixed with peat, and is perfectly hardy. Its near ally, *Leucothoe racemosa*, a common plant, found near the coast in damp thickets from Massachusetts far south, is also in flower. Less showy than the last-named species, it makes in cultivation a neat, compact shrub, with erect, rather rigid branches, covered with oval-lanceolate, bright shining leaves, and erect racemes of small, cylindrical, pure white flowers. It will flourish in peaty loam, and grows and spreads rapidly.

The great Flame-colored Azalea (*Rhododendron calendulaceum*) is in flower, rather later than most of the garden hybrids, in which its blood is mingled, and which do not surpass it in the splendor of its orange and flame-colored, odorless flowers. It is a common shrub in the Alleghany forests from Pennsylvania southward, where it often grows in great masses, lighting up, at this season of the year, the lower slopes of the mountains with sheets of flame. It is quite hardy in cultivation here. No North American plant surpasses it in brilliancy of bloom, and few are better worth a conspicuous and permanent place in the garden where the soil is suited to its wants. Limestone is fatal to it, as it is to all Rhododendrons.

Rhododendron punctatum, the smallest of the species of evergreen Rhododendrons, which are found in the Alleghany Mountains, is in bloom. It is a graceful shrub, with recurved or spreading branches and narrow leaves four or five inches long, covered, as is the whole plant, with scurfy, resinous scales. The rose-colored flowers, nearly an inch long, in lax, few-flowered clusters, are developed later than the shoots of the season, among which they are almost hidden. This is, therefore, a much less showy plant when in bloom than the hybrids, or varieties of *R. Catawbiense*, in which the new shoots from the base of the terminal flower-bud are not developed until after the flowers have expanded. It will never, therefore, be a very popular plant in gardens.

The Alpine Rose (*Rhododendron ferrugineum*), a dwarf species, rarely a foot high, from the high mountains of Europe, with minute, dark green, shining, evergreen leaves, thickly beset on the lower side with ferruginous dots and beautiful bright scarlet flowers, is in bloom. This is a hardy plant, well suited to find a conspicuous place in the rock-garden, and, from its many associations, one of the most interesting of the European shrubs. A good covering of Pine branches in winter will protect the foliage from burning, and insure better and more abundant flowers.

Ethionema coridifolium is a pretty little plant from Asia Minor, which does not attain a height of more than six or seven inches, and with only the lower part of the stems really woody. It has minute, pale, glaucous, crowded leaves, and terminal, crowded racemes of bright, rosy, lilac flowers. It is very hardy and an excellent rock-garden plant. *Ethionema* (from two Greek words signifying scorch and filament) is a genus of the Mustard Family (*Cruciferae*), distinguished by its winged and toothed stamens. The other species, of which there are two or three, are annuals and perennials.

Lonicera oblongifolia is one of the dwarf Bush Honey-suckles of the northern United States, which is worth a place in the garden. It has slender, upright branches, four or five feet high, oblong leaves, and rather large pale yellow flowers on long, slender peduncles, the corolla deeply two-lipped and fully half an inch long. It is found in cold, deep bogs from northern New York to Wisconsin and far northward. It takes kindly to cultivation here, however, and thrives in ordinary garden soil.

Spiraea corymbosa is a dwarf species of the Alleghany Mountains, found from Pennsylvania to Virginia and Kentucky. It grows to a height of one or two feet, and has pale, oval leaves, cut-toothed towards the apex, and large, handsome, terminal, compound corymbs of white flowers, which are now just expanding.

Jamesia is a genus of the Saxifrage Family, which commemorates the labors of Dr. Edwin James, who, when surgeon and

botanist to Long's Rocky Mountain Expedition in 1822, discovered in the mountains of what is now Colorado, the only species.—*♂. Americana*. It is a perfectly hardy shrub, with slender, erect stems, two or three feet high, the young branches, as well as the peduncles and calyx, clothed with soft hairs. It has small, opposite, pale, serrate leaves, canescent on the lower side, and few-flowered, axillary and terminal cymes of pure white flowers, nearly a third of an inch across when expanded. Although not very showy, this is a good subject for a rock-garden or the margins of a shrubbery.

June 20th.

♂.

The Forest.

The Forest Vegetation of North Mexico.—VII.

TWO miles beyond Cusihiuriachic our road escapes from the difficulties of the cañon and mounts to the open plain at an elevation of 6,700 feet. Whenever on our drive from this point to the Sierra Madre we pass low ranges, or the bluffs of dry ravines, or of watered valleys, we find their slopes covered with Oaks, the species *Quercus grisea* (*Q. Emoryi* being left behind at this elevation), and, scattered amongst these, perhaps, a few Pine trees, commonly *Pinus Chihuahuana*, more rarely *P. macrophylla*, also. The Papigochic River, as the upper Yaqui is called, flows northward along the eastern base of the Cordilleras for a hundred miles, receiving the numerous streams that issue from their cañons, until a little below the town of Temosochic it turns abruptly to the west, cuts a gorge through the mountains, which has never yet been explored by man, and in a distance of about fifty miles to the plains of Sonora falls not less than 4,000 feet. As we follow its course to the ford near Tonachic ranch, coming up its eastern bank from the old City of Guerrero, we notice on the mountain-sides opposite us striking evidence of the severity of the drought, which prevailed over the plateau during the first half of the present year, in broad belts of dead Pines, which still hold their brown foliage. Our Mexican friends assure us that there was scarcely any snow on the mountains last winter, and that the little lakes of the plains, brimful of water as we now see them, were for months dried to the bottom. Coming to the ford we find on the low rocky hills and bluffs of the eastern bank both *Pinus Chihuahuana* and *P. mycophylla*, equally numerous with the Oaks; and above the bluffs of the western side on the edge of the plain stand the largest specimens of *Pinus Chihuahuana* that I ever saw, magnificent trees three or more feet in diameter and sixty feet in height. In this situation their roots find a deeper and more fertile soil than usual, yet having the drainage which they require.

Beyond the river and these wooded bluffs a few more miles of treeless plain, interesting, however, with its waving growth of grass in numerous species, and we enter an open forest of *Pinus mycophylla*, whose elevation is 7,000 feet, and whose level floor is hidden, not with shrubbery, but with grasses and other herbaceous plants. A little within the forest, at the abandoned site of a saw-mill, our wagon road comes to an end, and there, beside a clear stream which flows past the base of the first mountain bench, we rear our tent, turn loose our mules to revel for weeks amidst the luxuries and forage of the neighborhood, and ourselves proceed to explore the abundant and strange vegetation by which we find ourselves surrounded.

We see the mountain-sides everywhere deeply furrowed with cañons, some of which are walled high with rock, through all of which, now that the rainy season is passing, tumble noisy torrents. Through one of these cañons—one a few miles south of our camp—the *Arroyo Ancho*, or Broad Cañon, whose stream has cut quite through this outer range and drains valleys of the interior, leads a mule trail to Yoquivo and the villages and mining camps beyond, a lone mountain trail, seventy-five miles it may be, without a human habitation. Each divide between cañons

leads, by an exceedingly irregular course, perhaps, yet with unerring certainty, up to the summits five miles distant.

Climbing by one of these ridges to the highest ledge which frowns over our valley, the altitude of which, as indicated by an aneroid, is 9,875 feet, we scan with delight the plains and the jagged mountain chains, over which we have come, the latter appearing blue through the faint haze with their thin mantle of forests, evergreen Oaks and Pines, the former dotted frequently with gleaming lakes, and traced by streams whose course is made more plain by straggling lines of trees, Cottonwoods in the lower valleys and Pines and Oaks on the higher portions—a pleasant land, which might be a fruitful and a prosperous one but for the lack of rain sustained throughout the year; a region now held by a meagre population, who cannot safely plant their homes except along the rivers, and who maintain a precarious existence by growing, by the most primitive methods, after the deluge of midsummer rains, crops of Corn and Beans on their nearer lands and tending a few herds on the wide areas beyond.

Looking north and west and south we behold, however, only a sea of mountains, none appearing loftier than the one upon which we stand, everywhere covered with forests, noble forests of Pine crowning broad summits, dense growths of Pine and Spruce and Oak shading the northern slopes and darkening the valleys and cañons, and even the dry ridges and sunnier slopes hidden under close growths of the more dwarf species of Pine, Oak, Juniper and Arbutus. This is the great forest of Mexico, a belt 50 to 100 miles in width and 800 miles in length, the chief source in the future development of this country of its lumber supply, then to be brought out by railroad trains, not, as we saw all along the road by which we traveled, on the backs of donkeys and mules, or, at best, in the ponderous carts of the country, with wheels hewn from trunks of trees, and drawn invariably by three pairs of oxen.

C. G. Pringle.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Not long ago I visited a green-house where a wonderful display is made of old and common plants all developed into well grown specimens. The high back wall was covered with the galvanized wire netting now so cheap and so well adapted for training plants; it was well covered with plants not commonly considered as climbers. The first in the row was a specimen of the old Oak Leaf Geranium, *Pelargonium quercifolium*, which was six feet high and nearly as many broad, though grown in an eight-inch pot. It was completely covered with clusters of bright purple flowers, and was really a revelation of beauty to one who had not thought of the ornamental capabilities of this plant. Then came a specimen of *Abutilon vexillarium* (*Mesopotamicum*) covering about fifty square feet of the trellis, and hung with countless red and yellow flowers. I learned, for the first time, what an admirable plant it is when well grown. *Asparagus tenuissimus*, in another place, wandered uncut, with shoots ten to twelve feet long, adding a feathery fringe to the *Abutilon*. Then came *Fasminium grandiflorum*, filling the air with its odor, and finally, at the end of the table, the much neglected climber, *Lophospermum scandens*, covering a large space with the cheerful green of its foliage and its wealth of rosy-purple flowers. On the centre table were Fancy *Pelargoniums* and *Fuchsias*, such as were seen at horticultural exhibitions before the Ferns and tropical plants absorbed all the space. The *Pelargoniums* from last fall's cuttings, and in ten-inch pots, were masses of bloom, four feet high, and so sturdily grown that no cluster of stakes was needed to support them, while the *Fuchsias*, from January cuttings, were pyramids five feet high and loaded with flowers. The only plant in the way of a novelty was a large specimen of the double white *Petunia*, Mrs. Dawson Coleman, which promises to be a great plant for florists' use in summer. In another house was a collection of *Begonias* of various sorts, all given space for full growth. Here were a *Begonia coccinea*, six feet high and four feet in diameter, covered with flowers from bottom

to top, *B. nitida alba*, nearly as large, with flower clusters as large as a man's hat, and *B. Rex* in many varieties, in eight-inch pots, with such a massive growth that I could not clasp hands around them. In this house the wire trellis on the back wall was covered with *Smilax*, which filled the air with the delicate odor of its flowers. A fine plant of *Clerodendron Thomsonæ* in a border at one end is intended to take the place of the *Smilax*, and an immense *Bougainvillea glabra* grows enormously, but has not yet bloomed well. The intention is to root-prune it and build a wall across the border, so as to confine its roots and insure its being kept dry in winter. If this is done it will probably next spring make an object worth going a journey to see.

I will not take space to write of the *Allamanda*, *Bignonia venusta* and other old-fashioned plants that were flourishing in roomy quarters, but it occurred to me that the skill of the true gardener was shown as effectively in producing noble specimens of common, though beautiful, plants, as it would have been in coddling a vast and crowded collection of diminutive novelties.

Albemarle County, Virginia.

W. F. M.

To the Editor of GARDEN AND FOREST :

Sir.—To the "Notes from the Arnold Arboretum," in GARDEN AND FOREST for May 30th and June 6th, permit me to add a few comments from a Western standpoint.

While the description of the fruit of *Ribes alpinum* as "large, handsome, scarlet, insipid" will apply perfectly to the wild mountain form, it does not describe the cultivated varieties found in gardens throughout eastern Europe. At the agricultural college near Moscow, Mr. Gibb and I found large plantations of Dwarf Juneberry, and adjoining them quite as large plantations of red and black varieties of *Ribes alpinum*. The fruit of the Currants was nearly as large as that of the Juneberry, and we thought superior to it in sprightliness and flavor. We have distributed some of the cultivated varieties found at Moscow, Orel and Varonesh, Russia, and shall expect reports in the near future.

Ribes aureum makes a hoister and more fragrant shrub at the West than in the moist air of New England, but we have a variety which is stronger in growth, handsomer in foliage and flower, and, we think, better in quality of fruit than the species. This we received from Dr. Fischer, of Varonesh, as *Ribes palmatum*.

Bush Honeysuckles are, as a rule, at home in our climate. *Lonicera chrysantha*, *L. Xylosteum*, *L. nigra*, *L. Ruprechtiana* and the named varieties of *L. Tartarica*, such as *splendens*, *speciosa*, *grandiflora rubra*, *grandiflora alba*, *bicolor*, *luteo-virginalis*, etc., are specially fine in habit, and flower on our grounds. It may be of interest to note that some of the supposed varieties of the common Tartarian Honeysuckle seem to be derived from a fixed and distinct type of the species found in east Europe. To illustrate: We received from Professor Sargent in 1880 a packet of seed of *L. splendens*. From these we have grown over one hundred seedlings. While they vary in color of flowers from pure white to all shades of pink, the habit of growth, expression and shape and color of the leaves closely resemble the *L. splendens*. This, joined with the fact that we met with varieties like the *splendens* in habit of bush and size and color of the flowers, will favor our idea that all of our named varieties of the Tartarian Honeysuckle are not derived from the same primitive forms.

The primitive form of the flowering Almond of Siberia flowers with us profusely very early in the spring, and the blossoms seem to endure a temperature several degrees below the freezing point. Last spring they were loaded with beautiful pink blossoms in March when water near them was covered in the morning with ice half an inch thick, yet the flowers showed no trace of injury, and the bushes were well loaded with Almonds, from which we now have growing plants. We also have a pure white variety of the Siberian Almond that is almost perfectly double. These are valuable in the parts of the West where the common garden varieties do not stand the winters.

J. L. Budd.

To the Editor of GARDEN AND FOREST :

Sir.—The discussion of the alleged poisonous properties of the *Ailanthus* in a recent number of GARDEN AND FOREST calls to mind a circumstance that fell under my observation in northern New York. It was decided to remove an *Ailanthus* which stood near a dwelling, on account of the popular prejudice against the tree, and for the same reason it was found difficult to find a man who would undertake the job. Finally one was engaged and he spent a day in cutting the tree down, commencing among the branches. At night his hands and

face began to swell, his eyes became closed, and for several days he was confined to his house suffering severely.

The sap of the *Ailanthus* is probably as poisonous as that of the poison Oak and poison Elder, which belong to the same alliance. If this is so, it is reasonable to suppose that the pollen of all three affects certain persons in like manner. I knew a person to remove from a certain locality where *Rhus venenata* was abundant, on the advice of a physician, because at the season of its blooming he was always attacked with violent symptoms of *Rhus* poisoning. In Virginia and neighboring States the *Ailanthus* runs wild in old fields.

Jacksonville, Fla., June 11th, 1888.

A. H. Curtiss.

Periodical Literature.

In *Longman's Magazine* for June will be found an article by Mr. Frederick Boyle which is in some sort a continuation of the one on Orchids to which we called our readers' attention some weeks ago as having been published in the same periodical. This time Mr. Boyle's title is "An Orchid Farm," and the place to which it refers is the establishment of the Messrs. Sander at St. Albans not far from London—the largest and most famous establishment for the importing, growing and selling of Orchids in the world. The author modestly confesses that no words can give a full idea of it, much less a distinct picture of the treasures which it contains. Yet his words certainly give us a clear general idea of the extent of the place and of the business there transacted, and a brilliant if necessarily vague sketch of the surprising charms of its contents. These, in so far as beauty and variety go, will be easily imagined by all who are familiar with Orchids, yet the masses in which they are shown are almost inconceivable. When we read of twenty-four successive houses, all of them at least 180 feet in length and the narrowest 32 feet in breadth, some given over to the sorting of new arrivals and the early stages of cultivation, but most of them filled with growing plants, we begin to realize the exactness of the word "farm" as Mr. Boyle applies it. And when he speaks of one house devoted almost entirely to *Odontoglossum crispum* in which twenty-two thousand pots have been counted, and of another 300 feet in length which he saw filled full of *Cattleyas* and allied genera all in bloom, we begin to see why he hesitated over an attempt at description. Many such facts as these he gives us, together with startling computations as to the value of the contents of this or that house and the magnitude of the orders constantly received and immediately filled. He also describes how the immense consignments of plants from all quarters of the globe are daily received and dealt with—amid manifold dangers from lurking scorpions, centipedes and poisonous ants—and traces some of the processes of cultivation. And then he notes some of the more remarkable individual plants which the establishment contains. A *Lalia alba*, for example, which he saw, bore 211 blossoms, and a basket of *Lalia anceps* measured three feet across. A mass of *Catasetum* was lying ready to bloom just as it had been brought from a Guatemalan forest—four feet by three in diameter and eighteen inches thick; and a *Cattleya Mossiæ* measured, in solid bulk, not including its leaves, five feet in height and four feet in thickness. This, a single plant and not a group, is said to be the largest Orchid ever brought to Europe. It grew on a tall tree near the hut of an Indian, whose private property it was and who long refused all offers to purchase it, but finally succumbed to the attractions of a beautiful rifle added to those of a large sum of money. Following his Orchids into their native haunts, Mr. Boyle speaks of the regard in which they are held by the South American Indians and of the way in which they garland their lonely forest churches with thickets of bloom, any one of which would be a treasure to the European amateur. But it is impossible here even to hint at all the entertaining facts which Mr. Boyle has interwoven with his account of the famous "farm" at St. Albans.

After all, however, much as we may admire Orchids, there are other things which more nearly touch our hearts, and a perusal of such an article as Mr. Boyle's affects us somewhat as does a long stay in the hot-houses where they grow—we are glad to feel a breath of fresh air again, and rest our eyes on the simple greens of the temperate zone. Fortunately *Longman's Magazine* affords the reader a chance to do this, for following upon the Orchid article we find one called "In the Woodlands" by the Rev. M. G. Watkins. It has not the poetical flavor of many similar articles which appear from month to month in our own magazines, but is very charming none the less in its glances at the woods and flowers of England; and here and there it gives proof of a more acute perception of the artistic properties of trees than the

ordinary lover of nature often reveals. For this reason it may be read with profit as well as with pleasure, and we may echo the wish for America which the author earnestly expresses for England—that a School of Forestry may soon be established. In speaking of the advisability of beautifying country roads, and not only city streets, by the systematic planting of trees, he says that “in some parts of North America every citizen is compelled to plant a certain number of trees—say six or a dozen—at his marriage or coming of age.” We trust this may be true, but should like to be told of the exact locality in which the rule is in force, especially as the words “coming of age” strongly suggest that some English mind has invented a friendly fiction to our credit.

Notes.

Ripe Tokay and Muscatel Grapes were in the Yuma (California) markets as early as June 13th.

According to the *Santa Barbara Herald*, the crop of Pampas plumes will be heavy, and already buyers are offering to take them at good prices. Not infrequently the profit from an acre has reached the sum of \$1,000.

Cherry trees were sprayed with arsenites at the Ohio Experiment Station soon after the blossoms fell this spring, and the result was that very little wormy fruit appeared, while on check trees, where the spraying was omitted, the curculio did much damage. Analysis of fruit a week after spraying showed no trace of poison. Spraying with a solution of lime was also tried, but it proved much less effective.

After the funeral of the Emperor William, in Berlin, the wreaths and other floral devices which had been sent from all parts of the country were exhibited in one of the rooms of the Hohenzollern Museum. They numbered more than 2,000, and consisted not only of fresh flowers, but also of Palm and Laurel garlands, of arrangements of Immortelles and Edelweiss, of gilded Oak leaves, and of foliage simulated in gilded or silvered metal.

From the discussions at the late convention of nurserymen in Detroit it was evident that the majority of members did not approve of reducing the postage on “plants,” and objected to adding this word to “seeds, cuttings, bulbs and roots,” in the bill now before Congress. The argument was that sending small plants through the mail interfered with the prices that must be asked by agents, and a large proportion of the business of nurserymen was transacted through agents.

Professor Budd is experimenting on a large scale with seedlings from the Russian Apples which he has imported. A series of crosses between the Russian Apples and certain American varieties have been made and the crossed seedlings are now growing. Many pure seedlings from the Russian Winter Apples are also growing. The hope is that varieties may be secured which will endure the trying summers and winters of our north-west region, and, at the same time, have the good quality of some of the more tender kinds.

Both branches of the Philadelphia City Council have voted to include the historic Bartram Garden among the Small Parks to be established under the ordinance of which mention has been already made in these columns. This means that the land cannot now be sold for any other purpose and that it may be taken by the city whenever it may choose to appoint a jury to assess damages, or that it may be taken by any responsible body of citizens who ask the courts to name a jury for this purpose and agree to pay for the ground as the jury may estimate its worth, or as may be arranged with the owners without a jury. In case an association of citizens take the matter in hand the city would without doubt respect the wishes of the donors as to how the garden shall be cared for. If the city pays for it the garden will remain at the tender mercies of city officials, who cannot always be trusted to treat such a possession with either the reverence or the good taste which its importance demands. Still, that so much has been accomplished is a matter for gratitude, and thanks are due in an especial manner to Councilman Thomas Meehan, the Chairman of the Sub-committee on Small Parks, for his labors in this behalf.

The statement which has been going the rounds of the papers that the old Endicott Pear Tree, planted by Governor John Endicott about 1630 on his farm in Danvers, Massachusetts, was dead, has no foundation in fact. This venerable tree is still alive and in a fairly vigorous condition. It now resembles in habit a low, wide-spreading Apple tree. A few years ago the trunk was split by a storm, which caused it to lean over the iron fence which protects the tree from cattle; it

then sent up from below the split a strong, vigorous shoot, which gives it its present bushy appearance. This tree was never grafted, as suckers from it produce the same inferior fruit as the main branches. Another famous Pear tree, known in Salem as the “Orange Pear,” and supposed to have been planted about 1640, is still alive and flourishing in a garden in that town. The soil and climate of Essex County seem favorable to longevity in Pear trees. The “Cogswell Pear Tree,” in the Town of Essex, is more than two centuries and a half old. John Cogswell brought the seed which produced this tree from England in 1635. This tree, which stands in the open field back of Mr. Edward Lee’s house, near the foundations of John Cogswell’s first house, still bears fruit, which is used for preserving.

Retail Flower Markets.

NEW YORK, July 6th.

Roses continue scarce, and are of poor quality. So rare indeed are all good flowers that all choice bouquets are set off with Orchids. Paul Neyrons are best of the Hybrids. American Beauties are very small and one-sided. Selected Hybrids are almost too poor to use, and cost \$3 and \$4 a dozen. Maréchal Neils and General Jacqueminots arrived in small lots from Newport. They cost \$1.50 a dozen. La France Roses are scarce and small. They cost \$1 and \$1.25 a dozen. Lily-of-the-Valley sells for winter prices—\$1.50 a dozen. There is little of it unless to order. *Lilium longiflorum* and Callas cost \$3 a dozen. Gladioluses, \$1.50; Pansies, 25 cts.; Buttercups, 35 cts., and Daisies from 15 to 20 cts. Pea Blossoms cost 25 cts. for a small cluster. Mignonette is of bad quality and in light demand at 25 cts. a dozen. Peonies are out of bloom. Florists receive plenty of steamer orders, but really have not the flowers to fill them. For the dinner given at Delmonico’s to the Duke and Duchess of Marlborough the favors ordered were not supplied, because it was impossible to get any Roses. Tamarisk foliage is used with good effect in tall designs.

PHILADELPHIA, July 6th.

Good flowers, and especially good Roses, were never less abundant than they now are. True there is little demand for flowers at this dead season. The “Commencements” are all over, and most of the flower-buyers are out of town. During recent years flowers have been used with less profusion at school commencements, but this year a decided improvement was noticeable in the demand, and certainly there are few occasions where they can be more appropriately used. Sweet Peas are still asked for, and are in fair supply. Zinnias are becoming more plentiful, and are catching the public fancy, owing to the improvements in them within the past few years. The tints and shadings in some of the flowers, though over showy perhaps, are really very beautiful and distinct. Rudbeckia may be obtained in limited quantities from the fields. It is figured in a recent number of *The Art Interchange*, and labeled “The Black-eyed Susan!” without any indications of its botanical name. It is frequently called the “Cone Flower,” and sometimes the “Buckeye Daisy.” Carnations, excepting white varieties, are fairly plentiful, and sell at 25 cts. a dozen. Sweet Peas, Zinnias and Rudbeckia also sell at same price. There are some few Mrs. John Laing Roses to be had at \$1.50 a dozen. Meteors, though not at all plentiful, cost the same. La France, Mer-mets and the Bride cost \$1 to \$1.50. Perles and Sunsets, 75 cts. to \$1. The demand for *Asparagus tenuissimus* and Smilax has fallen off considerably, though there is very little change in the price. A few flowers of that pretty wild pink Orchid, *Calopogon pulchellum*, are brought from New Jersey, and sell at 50 cts. a dozen. The orange-colored *Polygala lutea*, from the same State, are offered at 25 cts. a dozen. The two latter flowers have not been noticed in this city before. They will remain popular as long as they are in season.

BOSTON, July 6th.

The month of July is the duldest in the year for the florist. School graduations and social gatherings, which make a demand for cut flowers, are all finished; the fashionable season at the seaside resorts, which sometimes gives a little life to the business in midsummer, has not yet begun, and were it not for the “steamer days” and an occasional funeral, florists might as well lock up their shops. The season that has just closed has not been remarkable in any way; nothing striking or decidedly original has been introduced in the way of floral designs, and the only characteristic thing to say of the season is that it began late, and that the average price of cut flowers was considerably lower than ever before. Roses in midwinter were not up to the average either in quality or quantity, but otherwise the condition of the trade has been generally satisfactory. Among the best selling varieties at present, and in fact all through the season, are the Grace Wilder Carnations. It is a remarkable hold which this Carnation has taken of flower-lovers and buyers. The pink Pond Lily seems to be as popular as ever as a summer favorite. Gloxinias, Cornflowers and the golden Sweet Sultan are all among the popular flowers of this month. Out-door Roses are still plenty and cheap, the street peddlers handling the most of them. A few Sweet Peas and Asters are to be seen in the florists’ windows. There are no settled prices that are worth quoting. All is grist that comes to the mill just now, and no reasonable offer is refused.

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Water Lilies.

THERE are no plants perhaps which can be cultivated in the United States with less trouble and with more pleasure than Water Lilies; and certainly no plants create more admiration when they are seen in perfection.

The natural conditions here are peculiarly favorable to them. Shallow ponds with muddy bottoms in which the burning rays of our summer sun raises and maintains the temperature of the water to almost tropical heat, are common in many parts of the country. Our native Water Lilies flourish in such ponds, which may be made the home, too, of numerous hardy exotic species, and in which gorgeous tropical varieties may be set to flower during the summer months. Tropical Water Lilies are grown in heated tanks, too, under glass in some gardens; and they are often grown in out-of-door tanks which can be heated by pipes from the green-house boiler, if the tenderest species or very early flowers are wanted. Some of the finest varieties can be as successfully grown in a tub of water sunk in a city yard as in the most elaborately constructed and heated tank; and tubs of these plants plunged in the basins of fountains make the most appropriate and by far the most beautiful ornaments which can be used in such situations. Water Lilies are plants for the poor as well as for the rich; and their decorative capabilities are almost limitless. The number of species with handsome flowers is already large, and as several species hybridize freely, it is probable that we cannot form an idea even yet of the beauty which intelligent cultivation will develop in these plants.

The true Water Lilies (*Nymphaea*) may be divided into two classes: those which expand their flowers in the morning, closing them in the afternoon, and those which bloom only at night. Among those of the first class, none is more lovely than the common fragrant White Lily of the Eastern States (*N. odorata*). Its pure white, deliciously fragrant flowers are not surpassed in delicacy and in real beauty by any of the more highly colored and showier flowers of the tropics. This plant is very easily established in muddy, shallow ponds by simply pushing bits of the

root down into the mud, and it is one of the best Water Lilies to grow in a tub, when if planted in very rich soil it will produce an abundance of flowers all summer long. In the autumn the water should be turned off and the tub stored in a cellar or pit out of the reach of hard freezing. There is a pink flowered variety of the common Water Lily found in a pond in the town of Sandwich in Massachusetts. The flowers are much esteemed and sell for high prices, although really far less beautiful than the white ones. It is as easily cultivated as the typical plant; and when transplanted into other ponds it still produces its pink flowers. *Nymphaea tuberosa*, a native of the region from western New York to the Mississippi, where it inhabits shallow ponds and sluggish streams, is a handsome species with tuber-bearing roots, large bold leaves and pure white flowers, sometimes ten inches across. They are quite devoid of odor, however, and although this is a very hardy, free-growing plant, soon spreading over large areas, it has not the charm and will never supersede its humbler eastern rival. The yellow flowered Water Lily of Florida is hardy too at the north, and will flower abundantly if a warm situation and deep soil are selected for it. It is not a very showy plant, however, and the interest which it excites lies in the pale yellow color of the flowers (an unusual color in Water Lilies), rather than in their beauty, and in its history. For years it was only known by the picture joined to one of the plates in Audubon's "*Birds of America*," while its existence was doubted and denied. This sketch was made by the lamented naturalist, Leitner, one of the first victims of the Seminole war, and it is only within recent years that it was made known to botanists through the exertions of our associate, Mrs. Treat, by whom and by Mr. Curtiss it was introduced into cultivation. An interesting article from Mrs. Treat's pen, in which the finding of *N. flava* is described, was published with illustrations in Harper's Magazine, volume 55, page 365.

The European Water Lily (*N. alba*) is hardy in the Northern States, as are its varieties *N. alba candidissima* and *rosea*. The first of these varieties is the most beautiful of the European Water Lilies. It has large, pure white flowers with more waxy petals than our common Water Lily, and when grown under favorable conditions of soil and temperature it produces its flowers during a longer period. They are quite odorless, however, and these plants will probably never be cultivated here except by persons who desire to form a general collection. More attractive is the dwarf Water Lily of China and Siberia (*N. pygmaea*)—a hardy plant with miniature fragrant white flowers which remain open only during the afternoon.

The number of tropical Water Lilies is large. A few of them can be grown in the Northern States in artificially heated tanks only, but some of the finest flower freely in shallow ponds if they are started in heat and then transplanted into large boxes or tubs of rich soil, which should be plunged, when the water has become warmed by the sun, without disturbing the roots. Many of these too make excellent tub plants, producing flowers profusely through August and September.

The Victoria Regia, first cousin of the *Nymphæas*, the great Water Lily of the Amazon, although generally grown under glass outside the tropics, will, if treated as an annual, and started in early spring in heat, flower at the north in an open heated tank, and produce its enormous leaves and great white flowers in luxuriant profusion. In the Southern States it needs no artificial heat to develop its beauties; and we may expect to see, when it is better known, the sluggish streams of Florida and Louisiana become splendid by the presence of this, the noblest of all aquatic plants. Some idea of the beauty which may be given to southern ponds and streams through the cultivation of Water Lilies can be learned from our illustration (see page 245), taken from a photograph of one of the small lakes in the famous botanical garden at Buitenzorg, in the mountains of Java, upon which the Victoria Regia

and several of the larger tropical Nymphæas are floating, while in the foreground there is a great mass of the Indian Lotus.

Among tender Water Lilies which flower by day by far the best known in our gardens is the blue-flowered species from the Cape of Good Hope, *N. scutifolia*. It is a handsome plant, with bright blue flowers, and very easy to cultivate. In gardens it is sometimes confounded with *N. cœrulea* or *N. cyanea*, synonyms of the tropical African *N. stellata*, which the ancient Egyptians prized so highly and so often engraved on their monuments. Another blue-flowered Water Lily, which is probably only a variety of this last, is known in gardens as *N. Zanzibarensis*; it has larger and darker flowers, and is one of the finest and very best of all the Water Lilies in cultivation. Varieties are known with darker and with lighter flowers.

Among tender Water Lilies which flower at night are *N. Lotus*, an old world tropical species, with large, pure white or sometimes red flowers (*N. rubra*). It is the Lotus sacred to Isis, and famous among the Egyptians, who, in spite of its sacred character, made bread from its seeds and dried roots. It is one of the first of the tropical species cultivated in Europe and one of the handsomest. It is a parent of many hybrids, of which the most showy and the best known is *N. Devonensis*, one of the triumphs of English horticulture; and hardly surpassed in the brilliant color of its large flowers by those of any other Water Lily. *N. rubra* and *N. dentata*, now considered forms of *N. Lotus*, although quite distinct from a garden point of view, are exceedingly attractive plants, and this is true of the Jamaica Water Lily (*N. ampla*), with its yellow or yellow-white flowers. There are many more of the true Water Lilies in the tropics, but it is unnecessary to enumerate them here.

But the Nymphæas are not the only aquatic plants with attractive foliage and handsome flowers, and no collection of these plants will be complete without their near relatives, the Nelumbiums, the Sacred or Water Beans, with their broad, circular leaves, borne above the water on tall, stout petioles, and great, fragrant flowers, standing high above the leaves. There are two species, the yellow Nelumbium (*N. luteum*), a native of our Western and Southern States, and now naturalized in a few places in the East, notably in the Connecticut River below Hartford, and in the Delaware below Philadelphia, and in New Jersey. The American Nelumbium has handsome yellow flowers, sometimes ten inches across, and farinaceous tubers, which, like the seeds, are edible, and once furnished to the North American Indians an important article of food. The second species, *N. speciosum*, is a native of India. From time immemorial it has been looked upon as the emblem of fertility, and has been cultivated by the Egyptians and all the people of the East. It is the Egyptian Bean of Pythagoras and the Sacred Lotus of India. The lovely, delicate white, sweet-scented flowers, tipped with pink, which in one variety are pure white, stand high above the pale green leaves, and are not surpassed in beauty by those of any other plant. It is easily cultivated, and the fact that it has already become thoroughly naturalized in one pond at least in New Jersey excites the hope that this fine plant will some day be as much at home in the waters of the Middle and Southern States as it is in those of China and Japan. At the North it should receive the treatment necessary to insure the blooming of the hardier of the tender Nymphæas, although its more vigorous growth and rambling habit demand a separate compartment when it is grown in a tank with other plants, which otherwise it would soon exterminate.

The list of aquatic plants with handsome flowers and foliage is not by any means confined to the Nymphæas and the Nelumbiums, but enough has been said, perhaps, to draw attention to the pleasure which may be derived from the cultivation of this class of plants which are within the reach of any one who can afford a tub of water and a piece of sunny ground large enough to hold it.

The Artistic Aspect of Trees. III.—Color.

THE forms and the textures of trees having been briefly noted as they appear from the artistic point of view, it is time to say a word about their colors.

The color of foliage is more or less affected by its texture. Given leaves of a certain tint of green, the tree will seem darker if its head is massive and dense than if it is feathery and infiltrated with light. It is, of course, the general color effect, and not the color of a leaf separately considered, which concerns the student of nature's beauties and of the planter's tasks.

Among the varieties which nature creates when clothing her trees in her usual livery of green, an artist would distinguish varieties of tint and varieties of tone or "value." The green of foliage may be of a bluish, or a yellowish, or a grayish tint, and, keeping this tint, it may vary from a very pale to a very dark tone. Again, the effect of a tree may be compounded of the different colors shown by the different sides of its leaves—may be a mottled and not a simple tone; and it is always affected by the surface-character of the leaves, a smooth and shining tissue giving a tone quite unlike that produced by a dull or woolly tissue, even though upon examination the same shade of coloring matter be discovered. And then, when her greens are exhausted, nature falls back upon other colors and gives us such an eccentric thing as, for instance, the Purple Beech.

If, as we have said, it is impossible to learn how to appreciate and manage the forms of trees from written rules and counsels, it is still more impossible thus to learn with regard to their colors. Among artistic powers a feeling for color is the one which depends most upon an innate gift; and, though like all the others, it may be cultivated with success, a process of practical self-culture—of constant observation and comparison and appraisal—is the only one that can much avail. The trouble with most of us is not that we could not see the difference between harmony and disharmony in colors if we tried, but that we do not try. We do not really look at what we see. We accept what nature—and too often what the planter—sets before us, and neither reflect whether it is good or bad, nor stop to analyze the reason even when we are quite sure which it is. Although, however, reliance must chiefly be placed upon the cultivation of eye and taste, whether the aim be appreciation merely or action too, a few general principles may be explained in words.

As with qualities of texture, so with qualities of color, restfulness and dignity are more often desirable, and are desirable in larger quantities, than restlessness and fragile grace; and it may be broadly said that dark colors are more dignified than pale ones, and that the most restless of all are those which are mottled instead of simple. The unquiet look of a Silver Maple, for instance, as compared with the restful look of a Sugar Maple, depends as much upon the varying color of the under and upper surfaces of its leaves, as upon their more lace-like shapes and the more straggling form of the tree itself. The former is the better tree of the two to supply a lively accent in some situation where this is desirable; the latter is the better to use in large masses, or to place as a single specimen where a strong yet quiet note would be the right one.

A second point which may be indicated is that it is safer to place two tones of the same tint together—as a dark and a lighter bluish-green—than to associate two different tints—as a bluish with a yellowish green. Yet the most effective combinations, when they are rightly made, are those which owe their charm to contrast rather than to concord. Still another point is that grayish greens are those upon which dependence may best be placed for harmonizing strong notes of other kinds—approaching most nearly to those neutral tones upon which

painters on canvas put such reliance. We may sometimes see the fact illustrated towards evening, when a plantation which is inharmonious in color under bright light becomes harmonious simply by the fading out of one or two of its tints into grayish twilight hues.

Again it may be remarked that when a tree is not green at all—when it is purple, for instance, like the well-known variety of Beech, or red like some of the Japanese Maples, or blue like the Colorado Spruce, or bright yellow like many cultivated varieties of shrubs—it should be used with peculiar care and a discretion amounting to the most rigid parsimony. It is like the red cloak which the landscape painter is so fond of using—invaluable, sometimes, if set in exactly the right place, but by no means always desirable, and always ruinous if wrongly placed or over-emphasized. Finally, all objects which come in visual contact with our trees must be considered as affecting their own colors. A tree which would look well against a background of dark rock might not look as well lifted against a background of sky; and one which would harmonize with a brown or a white house might not harmonize with a red brick house. The sheen and color of water, too, and its reflecting powers, demand that its borders be very carefully treated. A bright tree which gives a welcome accent in itself might give a distinctly over-emphatic accent if doubled by reflection in a sheet of water; and, in general, moderately dark, or grayish, or whitish trees best sustain this reflection. We are right, for once, in our fashion of placing Willows near water; not only their feathery texture but their tender and often neutral colors fit them well for such situations. If we imagine a large White Willow changed to a vivid yellow-green, like that of the Box Elder, we feel at once that its fitness for the neighborhood of water would be seriously impaired. Of course in the autumn the case is different; then all tones are changed to more vivid ones; brightness is the characteristic quality of the landscape, and the brighter the reflected note, the better it often appears.

It should also be remembered that the color of its foliage is not the only thing which determines the color of a tree. Its trunk and branches are often very apparent and are sometimes very striking in color. The foliage of the Canoe Birch would not, of itself, make it a very conspicuous tree, but its dark glossy leaves with their paler under sides, in contrast with its pure white bark, make it so very striking that it is difficult indeed to place it harmoniously. The lighter hue of the foliage of the Silver Birch is also accentuated by the whitish-gray of its bark, as the mottled appearance given the Sycamore by the shape and disposition of its leaves is accentuated by the mottled color of its splitting and peeling bark. There is no end to the varieties of combination thus presented for the planter's use, and while each one renders his task more complicated and difficult, each affords him a new chance for some specially beautiful effect if he can learn how to use it rightly.

Among the Pines in June.

THE Pines in June are fairly ablaze with color. Gorgeous masses of broad-leaved Laurel forming dense thickets, are scattered here and there, and the intervening spaces abound with the showy Dogwood (*Cornus florida*), and wild roses fill the air with a delicate perfume.

The Japan Honeysuckle (*Lonicera Japonica*), has found its way among our native shrubs and threatens to strangle them. It extends over quite an area on either side of a small stream. I have watched its progress with much interest for ten years past, and to-day it is one mass of bloom, clambering over poison sumach and a great many other shrubs, and even large trees like the Sour Gum and Swamp Maple. Not one of our native vines can compete with it. Even the vigorous Ampelopsis is hidden beneath this wealth of foliage and flower.

The Cinnamon-fern (*Osmunda cinnamomea*) grows here in great luxuriance. The sterile fronds are above my head, standing out in graceful curves, perfect in outline, with not a broken or straggling frond. Such a magnificent bunch growing near our door would well repay the time and labor bestowed upon it. Our two other *Osmundas* are also here, as well as the two *Woodwardias*, and the sweet-scented *Dicksonia*, and several *Aspidiums*. The rare very local *Schizaea pusilla*, belongs exclusively to our Pine-barrens. I find it a few miles from home surrounded by many other choice plants—*Pogonia divaricata* and *P. verticillata* being among the number.

Our ponds and streams are now beautiful with white Pond Lilies, and the little Lake-flower (*Limnanthemum lacunosum*), is scattered among them. It has small, shining, heart-shaped leaves, often variegated with white and yellow, and clusters of white wheel-shaped flowers are intermingled with the pretty leaves.

The Water-shield (*Brasenia peltata*) is also in the same pond, and its oval, shield-shaped leaves float among the Lilies and Lake-flowers. The flowers of the Water-shield are of a dull-purple color, and its stems and buds are coated with a thick, transparent mucilage.

The inflated Bladderwort (*Utricularia inflata*) is mixed with the other plants, floating on the water, and when free from them it goes where the wind wills it, with its cluster of bright yellow flowers standing above the water and carrying within its curiously formed bladders hosts of tiny larvæ and animalcules. The purple Bladderwort is here too with violet-purple flowers. The bladders on this are very abundant and quite unlike those of our other species. Under the microscope they are curious and beautiful objects.

The long-leaved Sundew (*Drosera longifolia*) is growing in the more shallow parts of the pond. This species more than our others, has the power of adapting itself to its surroundings. Some of the stems are more than a foot in length, with a cluster of purplish leaves raised above the water and covered with reddish bristly glands that exude a transparent, glutinous fluid which glistens in the sunshine like dew-drops. Many unhappy insects have been lured by the fascinating glitter and become hopelessly entangled among the bristles, and the leaves have rolled entirely around some of the victims. And for what purpose? It surely cannot be for lack of nourishment.

The Arrow-head (*Sagittaria*) grows along the margins of the pond. Some of the forms are very firm, with large, broad, sagittate leaves, which in other plants are simply lanceolate. The Arrow Arum (*Pellandra Virginica*) is in company with the *Sagittaria* as well as many other charming plants, and altogether the Pine Barrens are very far from being barren of beauty in these early summer days.

Mary Treat.

Window Gardening.

IN the summer of 1882 I attended in London the annual Flower Show of the Westminster Society for promoting gardening among the working classes.* The exhibition was held in tents located in the College garden of Westminster Abbey, and a band of music added to the attractions. A small admission fee was charged. Many of the plants were admirably grown, and would have been worthy of a prize anywhere. There was a large attendance of orderly people, many of them evidently of the poorer classes; also a large sprinkling of richer people. The most interesting event of all was the presentation of the prizes. On a platform in the open air a number of ladies and gentlemen might have been seen, among them Dean Bradley and the late Earl of Shaftesbury; the latter, as had been his custom for many years, presented the prizes. The fortunate ones came up one after the other to receive the awards from his hands; and it was a sight not soon to be forgotten. It was evidently a great pleasure for the Earl, for he had a pleasant look and a kind word for all, and especially for the children.

Hodder, in his "Life of the Earl of Shaftesbury," in speaking of the interest that the Earl took in this Flower Show,

*The late Dean Stanley was President of this Society.

says: "The flowers, humble and simple enough, breathed whispers of strange histories. Some were reared in furtive hours in crowded slums; some came from the work-house, and many from the parochial, national, infant, Sunday and ragged schools; some from the kitchens of domestic servants and the quiet homes of working people. The advantages of these flower shows in a social aspect were many. They provided a source of simple recreation, and gave a new interest in home by adding unwonted cheerfulness to the comfortless rooms of the poor. They became the means of drawing attention to some of the social wants of the working classes, such as the need of fresh air, ventilation and more space. They taught them simple habits of forethought and prudence, for if they would win the prizes they must purchase their plants long beforehand, and expend money and time on what might only be a probability of success. Their chief good was that in watching the growth and progress of the flowers under their care the children and their parents were brought into close contact with something pure and innocent and beautiful; something that should speak to the better part of their natures and tell them of Him who has made the earth beautiful and fair."

Lord Shaftesbury believed there was nothing among the secondary means of instruction for the people to surpass window gardening and flower culture.

The love of plants and flowers on the continent of Europe is perhaps more universal than in England even. Hurst, in his "Life in the Fatherland," says: "But while the universal pains bestowed by the affluent on plants of the rarest and most beautiful variety is admirable, the almost paternal care lavished by the poorest and humblest on such flowers as they can have is touching. The family that is crowded into a single story of a small house is sure to have each window, however small, occupied by flowers. They are healthy plants, too, for they seem to be always in blossom and the leaves are of the freshest verdure. In the narrowest streets and lanes, in town as well as country, there is a love of flowers and a skill in training them into thrift and beauty, confined to no class or condition, and exhibited alike by small children and very aged persons."

Many of these foreigners who come to this country bring this love of plant life with them. I have in mind a German woman in this city, whose plants are always the envy of the neighborhood. I asked her once how it was she succeeded so well when others failed under nearly the same surroundings. She said: "She did not know; only she thought she must love the plants better." I think this German woman was right in her conjecture. No one can expect to be a really successful grower of plants unless he really loves them. Who can read that charming story of "Picciola," by Saintine, without believing that a plant reciprocates the love bestowed upon it! This plant, prison grown and cared, became almost a human being in its power for good. Among the well-to-do classes in America the love of flowers is undoubtedly increasing year by year, and as a proof of this notice the large sale of flowers in the stores and on the street, and the flower-beds so carefully planted and watered by the occupants of the country house.

There is, however, need of an effort to spread a greater love of plants and flowers among the poorer classes. Largely it must be done through the children by example and education. The public and the Sunday school should do what it can in this direction. Something has already been done, notably in Boston, where many of the churches give pot plants to the children at Easter, and this custom is increasing. This seems far preferable to the old plan of giving only flowers, which so soon wither and decay. The plants also look very pretty as a decoration to the church. In one Sunday-school at least prizes have been offered for the best plants brought back the next Easter, thus encouraging the children to care for them during the year.

The Massachusetts Horticultural Society has for several years offered prizes for window gardening to children eighteen years old and under. The value of these prizes has ranged from 50 cts. to \$1.50. The effort of this Society to popularize the cultivation of flowers by encouraging children in the love and care of plants deserves high praise.

I am not aware that any other society has made any similar attempt. Something more, however, should, I think, be done by our Horticultural Society when the prizes are awarded. Why not distribute the prizes on an appointed day when the officers of the Society might be present; and why not select some competent person to address the children and present the prizes to each child personally? This, I think, would have an encouraging effect and stimulate them to greater efforts in the future.

Boston.

J. D. W. French.

Foreign Correspondence.

London Letter.

THE fortnightly exhibition of the Royal Horticultural Society held yesterday was an unusually full one, and the number of new and rare plants was larger than it has been for several meetings. This being now just the height of the Orchid season, there were many good things exhibited and not a few were submitted to the committee for certificates. Perhaps the loveliest of all the Orchids shown, certainly the rarest and most valuable, was *Cattleya Wagerii superba*, which may be best described as a white form of *C. Mossiæ*, a large bold flower, with broad sepals and petals and a wide shallow lip. The whole flower is pure white, excepting the large blotch of citron-yellow on the labellum, which, however, does not mar the chaste beauty of the blossom. This particular plant represented a much finer form of Wager's *Cattleya* than has yet been seen, the flower being larger and of better form, and fully justifies the additional name, *superba*. The specimen came from the unrivaled collection of Baron Schroeder and bore over a dozen flowers. Another Orchid that excited some interest and received a first-class certificate, was a new *Phalænopsis*, recently named *P. gloriosa* by Professor Reichenbach. It is, however, so much like *P. amabilis*, that one might easily mistake one for the other. In both the foliage is tinted with a purplish hue, and both have large white flowers, with the lip stained with vinous purple. It was exhibited by Messrs. Low, of Clapton, and their manager, Mr. Casey, tells me that it is a freer growing plant than the old *P. amabilis* and a much freer flowerer, and if this turns out to be the case everywhere, it is an acquisition, undoubtedly. Messrs. Low also showed a form of the new *Cypripedium bellatulum*, for which they received a certificate at the last meeting. The variety is called *roseum*, because the flowers are distinctly washed or stained with claret purple on their exteriors. Though I do not agree with the principle of certificating mere varieties that exhibit only a slight deviation from the types, I think that if this coloring in the flowers of this *Cypripedium* is constant, it will be a beautiful Orchid. The intimate relationship between *C. bellatulum* and *C. Godefroyæ* is as apparent as that between *Phalænopsis amabilis* and *P. gloriosa*, and many are of the opinion that the points of distinction, from a cultivator's standpoint, are weak. A fourth Orchid, certificated on this occasion, was an extremely fine form of *Odontoglossum nebulosum*, called *excellens*, exhibited by Messrs. Sander & Co., St. Albans. I have never before seen such a fine variety, the only approach being that named *pardinum*, which I remember seeing in splendid bloom in Messrs. Backhouse's nursery at York some time ago. The excellent variety has flowers fully a third larger than the type, with the broad sepals copiously marked with large spots of purple, which, not being confluent, makes the flower very pretty. The typical *O. nebulosum* is one of the finest of Mexican Orchids, and, in our moist climate, it can be grown to perfection. A remarkably fine form of *Odontoglossum Hallii* named *magnificum* won a certificate. The flowers are much above the usual size, and with broad sepals and petals and an extraordinarily wide labellum, while the colors, pale-yellow ground and coffee-brown markings, are richer than in ordinary *O. Hallii*. It was shown by Mr. Pollett an amateur, who owns a choice collection of Orchids near London.

A very beautiful new Japanese shrub was shown by Messrs. Veitch of Chelsea, to whom a first-class certificate was worthily awarded. This was *Syrax Obassia*, a dwarf shrub, having leaves of rounded outline as large as those of *Catalpa*, and bearing drooping racemes, six inches or more in length, of pure white flowers, resembling those of a *Philadelphus* or *Mock Orange*. Judging by the number of flowering branches exhibited, it must be a free flowerer, and it is certainly one of the most beautiful



Water Lilies in the Garden at Buitenzorg—See page 241.

shrubs that has been shown for a long time. It is said to be quite hardy in the open air in the Coombe Wood nurseries near London, hence it is a most valuable acquisition. Messrs. Veitch also showed flowering twigs of the pretty *Styrax japonica* (considered by some to be a form of *S. serrulata virgata*). The flowers of this species are white, also, and, as they hang thickly on the twigs, they remind one of our old favorite, the *Solanum jasminoides*. This *Styrax* is also hardy at Coombe Wood.

The hybridization of stove Anthuriums has been carried on in Belgium to a great extent, and has resulted in a multitude of hybrids, some few of which are excellent and decided improvements upon their parents. The principal species that have been used in hybridizing are *A. Andreanum* and the old *A. Scherzerianum*. One of these new hybrids was shown yesterday by M. Linden, of Brussels, and the committee gave it a first-class certificate. It is called *A. Desmetianum*, after one of the Ghent nurserymen. The plant is a good deal like *A. Andreanum* in growth, having similar heart-shaped leaves, and also a heart-shaped flower-spathe about four inches long, but, instead of being of the usual bright scarlet, it is of the deepest blood-red-crimson, a color not hitherto seen among Anthuriums. It is certainly a break from everything yet produced, yet it may be only a seminal form of *A. Andreanum*.

A new *Sarracenia* named *S. Williamsii* was shown by Mr. B. S. Williams and was certificated. It is a hybrid between the dwarf *S. purpurea* and one of the tall pitcher species, such as *S. flava* or *S. Drummondii*. The pitcher-

ers are about fifteen inches high, of massive size, and very handsomely shaped about the lid and mouth. They are of a cheerful apple-green, marked with a tracery of heavy crimson veins. Though we have such a large number of hybrid *Sarracenias*, there is certainly room for such a handsome sort as this.

W. Goldring.

London, June 13th.

New or Little Known Plants.

Amelanchier oligocarpa.*

ALL of the American forms of the Shadbush or Juneberry have long been grouped together as varieties of one species, *Amelanchier Canadensis*. Of late years the western species, *A. alnifolia*, which was figured in a recent number of GARDEN AND FOREST, has been recognized as distinct. A figure is now given of one of the eastern varieties which seems to be equally worthy of specific rank.

Unlike our common Shadbush, which is often found in dry, open woods, this is an inhabitant of cold swamps and mountain bogs, and is found only northward, from Labrador and Rupert's Land to Newfoundland, New Brunswick, northern New England and New York, and the shores of Lake Superior. It is a low shrub, rarely more than from two to four feet high, and the smooth

* *A. OLIGOCARPA*, Roem. Syn. Monog., iii. 145. A low bush; leaves oblong or rarely oblong-ovate, acute at each end, sharply serrulate, glabrous (somewhat pubescent when young); flowers one to four, long-pedicellate; petals obovate; fruit dark purple, obovate to short-oblong.

and mostly oblong leaves are acute at each end and usually very finely serrulate. The long-pediceled flowers are solitary or in pairs, or rarely three or four in a raceme. The petals are broad and obovate, instead of oblong or linear, and the fruit is large, dark blue-purple, with a heavy bloom, and often nearly twice longer than broad. It is sweet and with a more decided flavor than the ordinary Juneberry, which is globose and crimson or purplish red.

A word may be said in regard to the specific name which is here adopted, inasmuch as some botanists, who are disposed to make the claim of priority override every other consideration in nomenclature, may assert that right for a supposed earlier name, *A. sanguinea*. But the *Pyrus sanguinea* of Pursh, the *Aronia sanguinea* of Nuttall, and the *Amelanchier sanguinea* of De Candolle and nearly all later authors, have no connection with this species. Roemer's name, based upon the *Mespilus Canadensis*, var. *oligocarpa*, of Michaux, who was the first to notice its peculiarities, must take precedence.

S. W.

Plant Notes.

Two Interesting Willows.

THE Hoary Willow (*Salix candida*), a dwarf white shrub, two to five feet high, with narrow lanceolate leaves, densely covered, as well as the young shoots, with a white web-like wool, and with beautiful rose-colored catkins of flowers, is a rare plant in New England, where it is only known in one station in Essex County, Massachusetts, discovered a few years ago by Mr. John Robinson. Further south and west it is more common. This little Willow, although an inhabitant of bogs, is easily cultivated in ordinary garden soil. Its flowers and its foliage entitle it to a place in any garden.

Another interesting plant is *Salix balsamifera*. It was first discovered more than half a century ago among the White Mountains of New Hampshire; and later in British America, from Labrador to the Saskatchewan, by Drummond, Dr. Richardson, Bourgeau and Macoun. It was long unseen in the White Mountains, but in 1879 was rediscovered, and is now known in several places, thanks to the zeal of Mr. Edwin Faxon in exploring the White Mountain Flora. It is "a much and irregularly branched shrub, four to ten feet in height, sometimes growing in clumps of thickly-set, straight, upright stems one to two inches in diameter at the base, not much branched till near the top; bark of old stems rather smooth, dull gray, branches olive, recent twigs reddish-brown, or on the sunny side shining chestnut; leaves ovate, or ovate-lanceolate, two to three inches long, one to one and one-half inches wide, broadly rounded, and usually subcordate at base, acute or acuminate, at first very thin, sub-pellucid, and of a rich reddish color; at length rigid, dark green above, paler or glaucous beneath and beautifully reticulate veined, glabrous on both sides or with a few scattered silken hairs when just expanded; margin glandular-serrulate, petioles long and slender, stipules noticeably absent throughout, or on the most vigorous shoots minute and evanescent; aments borne on slender leafy peduncles; densely flowered, very silky, obtuse cylindrical, one to one and one-half inches long, scales rosy, anthers at first reddish, becoming deep yellow; female ament less silky, becoming very lax in fruit two inches or more long; capsules rostrate from a thick base, the conspicuously long and slender pedicels six to eight times the length of the nectary; style short, bifid, stigmas spreading, thick, two lobed." This description is taken from an interesting notice of this Willow in the May number of the Bulletin of the Torrey Botanical Club. It is from the pen of Mr. M. S. Bibb, to whom Mr. Edwin Faxon writes, "With just now the fertile capsules opening and coalescing into huge, soft balls of whitest wool, almost hiding the beautiful red and maroon leaves of the growing tips, it is certainly the handsomest Willow I ever saw."

Salix balsamifera takes kindly to cultivation and is now well established in the Arnold Arboretum.

7.

Pyrus salicifolia.—There is a remarkably fine specimen of the Willow-leaved Caucasian and Siberian Pear in the old nursery grounds of the Messrs. Parsons at Flushing. This plant, one of the hardiest and most ornamental of the family, is rarely seen in our gardens. It is a small tree, sometimes twenty or

twenty-five feet high, with spreading or pendulous branches, and narrow, silky hoary leaves, which make it a pleasing and conspicuous object throughout the season, while the white flowers, often tinged with pink, which appear rather later than those of the common Pear tree, are very beautiful. There is a variety with decidedly pendulous branches which is one of the most desirable of all the small weeping trees.

New York.

D.

Cultural Department.

The Vegetable Garden.

OLD plants of Globe Artichokes produce heads about the 1st of July, and last in good bearing condition for several weeks; the plantations set out last spring, if from divided crowns, afford a succession, but if from this year's seedlings they may not bloom till next year. In order to keep them in good bearing condition, cut off all heads as soon as they are fit to use, even if they are not wanted for use. Among Jerusalem Artichokes pull out all shoots found outside of the hills; this gives larger tubers than when the plants are allowed to grow in a thicket. The tubers will not be large enough for use before September.

Asparagus beds should have a good cleaning and the plants should be left to grow at will. If the larvæ of the Asparagus beetle has appeared in the beds, in the morning when the plants are wet with dew dust them with Paris green and plaster of Paris in the same way and proportions as for Potato beetles on Potatoes, but be careful that no other vegetables, as Lettuce, Snap Beans or Cauliflowers, that may be grown near the Asparagus, are touched by the poison.

Sow Snap Beans at least once a week till the middle or end of August. They are, according to the weather, a seven to nine weeks' crop—from sowing till gathering. The Golden Wax varieties are considered the tenderest, but no yellow-fleshed Snap Bean looks as well upon the table as green-fleshed ones. Valentine and Mohawk, both green-fleshed sorts, are of first quality. If the vines of Lima Beans fall away from the poles tie them up. Keep them clean and well hoed to induce quick growth and early fruiting. The main crop generally comes from the 7th or 15th of August and continues in bearing condition till destroyed by frost. Try to keep up a supply of Peas till the Limas come, but this is sometimes hard to do, as after the middle of July mildew overtakes and destroys the Pea crop. About the middle of July to 1st of August put in a few sowings of Peas, to come in about the middle to end of September. Use early or second early Marrow Peas, as Alpha, McLean's Advancer, Veitch's Perfection, or Bliss' Abundance, and avoid late Peas, as Champion of England, Telephone and Omega, or round Peas, as Daniel O'Rourke. The American Wonder is a very good Pea in its way, dwarf habit, excellent flavor, but it does not bear enough or last long enough in usable condition to pay for growing it. Blue Beauty—a new Pea—has done exceptionally well this year. It was sown April 11th in well enriched sandy land, and we began picking the Peas June 20th. Vines two and one-half to three feet high, very prolific; pods round, compactly filled with large green peas, averaging five in a pod; peas of excellent flavor, and we continued to pick for six days. Another new Pea called Quantity, and which is after the fashion of Abundance, has also behaved very well. Sown April 11th, we began picking from it June 25th. Vines three to three and one-half feet high, very prolific; short, well-filled pods, containing five to six peas of capital flavor. The great English Pea of last year, Royal Jubilee, sown April 11th, fit to pick June 29th; has very large, flattish pods, containing some seven peas, large and of fine flavor. Vine three to four feet high. It is a fine, showy Pea, but not good enough to crowd out old favorites.

The Cabbage tribe now requires particular attention. We have had Wakefield Cabbage since the first of June, now Early Summer and All Seasons, but at this time of year when Peas and Cauliflower abound, Cabbage is not in much demand. Set out Cabbage and Savoys for fall and winter use. If transplanting is delayed they are not likely to form solid heads for pitting in winter. Plant out Brussels Sprouts as soon as possible; they should be in condition for use from September till Christmas. Of Cauliflower set out a main crop now, and again early in August. This last setting is to be lifted and heeled into cold-frames in November for use during the winter months. These plants like rich land. They usually follow early Sweet Corn, early Potatoes, Beans and Peas. But it often happens that we have not ground enough ready for them in July, and if we leave the plants in the seed beds they will get long-stemmed and overgrown, and when set out suffer

a good deal and take a long time to recover themselves. This can be avoided by lifting and potting the young plants at once. Use four or five inch pots, and plunge them to their brims and close together in an open plot out-of-doors. And if there is a probability of the plants being late, pot them off in this way, and it will help them greatly. When potted plants are set out they grow straight ahead without ever wilting. The earliest Cauliflower and Cabbage plants should be pot-raised; they should be almost half grown in pots before the land out-of-doors is fit to plant. Sow some Dwarf Green Curled Kale now for plants to set out in August. Any empty spaces can be filled with Kale. There is no need of its attaining mature size before winter; if even half grown it is very good. Before frosty weather sets in it may be lifted and heeled in close in a cold-frame for use during winter.

Sow a row or two of large-leaved (not large-rooted) Chicory for use for salads in winter. If sown much earlier it goes to seed.

The main crop of Carrots and Beets should not be sown before July. Carrots may be sown any time in July and a few the 1st of August. The short stump-rooted Carrots are better than the long ones. Carrots sown now keep tender all winter long, but Carrots raised from April and May sowings become so hard and flavorless before winter that they are only fit to feed to stock.

When to sow Beets must be regulated by the place and season. Here the proper time is late July and early August. Beets are only wanted just large enough, say two to three inches in diameter, for use, solid and tender. Large or early sown Beets are apt to be foggy inside and unfit for table use. And as it is with Beets so it is with Turnips. Winter Turnips should never be sown here before the middle of August, because they are hardier and have a longer season of growth, to the second or third week in November. Purple-top Round Globe and Strap-leaf Turnips are very good. Sow some Parsley now in a cold-frame for use in winter. That sown now will yield nice leaves from November till May or June, whereas the plants raised from spring sowings will run to flower after February.

Keep up a regular supply of Lettuces by frequent sowings and plantings. There is no Lettuce that will not run to seed very quickly at this time of year. Grow in rich soil and water abundantly in dry weather. But as this is a "quick" crop, use as a catch-crop between rows of other vegetables rather than as a main crop of themselves. In the same way make a small sowing of Spinach and Radishes every week. It is useless at this time of year to make large sowings or plantings of such short-lived crops as are Spinach, Lettuces or Radishes.

Keep up a succession of Sweet Corn. Moore's Concord gives excellent satisfaction, and a little may yet be planted every week.

Cut back Melon vines that wander beyond their proper place, and if they grow so thickly in the hills as to threaten to smother one another, do not hesitate to thin them out severely. Sow some Cucumbers in a cold-frame. Of course, if sown out-of-doors now, they will have time enough yet to mature their fruit before cold weather sets in, but about the end of August aphides usually attack and destroy the vines. In the open ground it is difficult to overcome this pest, but in frames they can be destroyed by a free use of fresh tobacco stems or powder, keeping the frames shut up at the same time.

Cucumbers for pickles are best grown in the open ground. For pickles, growers hereabout are very partial to Nichol's Medium Green.

Glen Cove, N. Y.

Wm. Falconer.

How to Grow Quinces.

MR. CHAS. L. JONES, of Newark, N. J., has had unvarying success with this fruit and his trees have now been in bearing thirteen years. For several years he has gathered from each tree from 400 to 450 Quinces, and last year the average was 475 to a tree. Mr. Jones asserts that any one can grow Quinces in a city back yard and he gives a full explanation of his method of culture in a recent number of the *Rural New Yorker*. The first injunction is not to stir the ground deeply near the tree. The Quince throws out many fine feeding roots near the surface, and these should be encouraged, fed and protected. Hence the ground about the tree, to a distance as far as its branches extend, is undisturbed, except to keep down the weeds, which are cut close to the surface with

a push-hoe. Late in autumn a dressing of barnyard manure is given, and in early summer a mulch of salt hay or other coarse material is added. This keeps the fine roots moist and cool and furnishes them with food.

The next essential is proper pruning. This does not mean an occasional thinning out of the branches as they become crowded. Indeed, as the tree is often deficient in foliage, no thinning out is practiced, but every spring the new growth all over the tree is pruned back or "headed in," so as to leave but four or five buds. This means that from two to four feet of wood is cut from every thrifty shoot. As a result of this treatment, the entire outer surface of the tree is literally covered with fruit of good size and quality.

It is a slow and tedious operation to pick off the young seed pods from Rhododendrons and Azaleas, but it pays to do it. If the pods are allowed to mature the new shoots which spring from lateral buds just below the terminal inflorescence often make a feeble and unsatisfactory growth, and fail to set flower

buds, the strength of the plant going to the perfection of the seeds. The operation, if performed as soon as the plants are out of flower and before the stem becomes hard, is quickly done by pinching out the whole flower cluster just above the new shoots, although some care is necessary not to remove these also. Of course, if the new growths are broken or mutilated, there will be no bloom on them the following year.

D.

Orchid Notes.

Orchids in Bloom at North Easton, Massachusetts.

THE collection of F. L. Ames, Esq., is worthy of note at this season, containing as it does handsome specimens, many of them unique. On entering the Orchid houses one passes through a handsome reception room, recently erected for the accommodation of visitors, into a large span-roofed structure 100 feet long containing chiefly Cypripediums and Cattleyas. A few days ago the former were remarkably gay. Worthy of note among them was a handsome plant of the rare *C. Schroderae* with six stout spikes bearing ten large, well formed flowers, a sight not easily forgotten. Among other well grown and healthy plants were examples of *C. caudatum Wallisii*,



Fig. 41.—Amelanchier oligocarpa.—See page 245.

sometimes called the white *C. caudatum*, with twelve strong growths and four fine flowers, the tails measuring fully twenty-one inches, of *C. Veitchii* with seven bold flowers, and an exceptionally fine variety, *C. præstans*, with enormous flowers and broad foliage of stout leathery texture; of *C. ananthum*, a grand specimen, promising a fine display of bloom; of *C. Arthurianum*, with eleven strong growths, together with five plants of *C. Arnesianum*, *C. albopurpureum*, *C. Fairieanum*, *C. tonsum*, *C. Druryi*, *C. Sedeni candidulum*, *C. Petri*, *C. selligerum majus*, *C. Morganæ*, and numerous other rare species. The Cattleyas were showing a marked improvement, the foliage having a dark green appearance, and quantities of newly made roots were spreading over the pots and baskets in all directions. Mr. Robinson, the gardener, attributes this to the abundant supply of air he gives the plants, the atmosphere in the house being always fresh and invigorating, a point he considers essential if strong growths and well formed flowers are to be expected. Several specimens in grand condition were noted, amongst them a plant in full bloom and with 100 bulbs of the rare *Cattleya Wagnerii*, the showy *C. Reineckiana* with twelve flowers and in fine form, also two magnificent specimens in full bloom with upwards of 200 bulbs of *Cattleya Skinneri*. The rare *C. Triana Lecana*, *C. Trianae Osmanii*, *Lalia bella*, *L. Perrinii alba*, *L. callistoglossa*, *L. grandis*, with large specimens of *L. purpurata*, *L. elegans* and *L. elegans alba*, are all in superb condition. One of the finest examples in cultivation of *Sobralia xantholeuca* was in bloom, its large yellow flowers affording a delightful contrast with its dark green foliage. With the Cattleyas were noticed a handsome plant of the scarce *Calogync Dayana* with six fine spikes, a specimen of *Dendrochilum glumaceum*, and a striking variety of *Calanthe masuca*, the mauve color of its flowers being unusually dark. The Pleiones occupy a shady position of the same house, where they receive an abundant supply of water during growth. Thunias also were in fine health. The rare *T. Veitchii*, a hybrid between *T. Bensoniæ* and *T. Marshalli*, is in bloom and very attractive, certainly a splendid acquisition to this desirable genus. The Vandas and *Ærides* in this collection grow very rapidly, and among the former are specimens of *Vanda Sanderiana*, *V. carulea*, *V. Lowii*, *V. suavis*, *V. tricolor*, and the recently introduced *V. Amesiana*. *Ærides Leonii expansum* (in bloom), *A. odoratum*, *A. Fieldingi*, *A. crassifolium* and others were represented by fine specimens. Many hybrid Odontoglosses of the Alexandræ type were growing freely in the house set apart for this genus, also large plants of *Oncidium macranthum* with stout growths, and a fine healthy group of *Masdevallias* growing rapidly, including amongst others a fine plant of the rare *Masdevallia Carderi*, with examples of *M. Fraseri*, a hybrid between *M. ignea* and *M. Harryana*, strong plants of *M. Schlimii*, *M. Veitchii*, and several plants of the curious and interesting *M. Chimara*.

June 20th.

A. D.

Odontoglossum nebulosum.—This is a pretty Mexican Orchid belonging to the maculatum group, with round, compressed bulbs, and short, broadly lanceolate leaves. The scapes which spring from the young growths are erect, about 10 inches long, and bear six to eight flowers. These are about three inches across, pure white, with the whole central portion spotted with greenish brown shaded to a red brown on the outer circles. The crest is yellow and column white. There is a variety called *candidissima* in which the spots are absent. *O. pardinum*, a species spotted more thickly than the average, has been long introduced, but does not seem to be very popular for some cause. It is easy to grow, requiring the same treatment as *O. crispum*, except that it needs a longer rest and much less water during this period. *Odontoglossum Walisii purum* is quite distinct. In growth it resembles *O. roseum*, but has rounder and larger bulbs and longer leaves. The raceme is slender, drooping, and bears some twelve flowers. These are about two inches across, not unlike a good variety of *O. Sanderianum*. The pandurate lip is beautifully fringed, rose purple, bordered with white. It is a native of the mountains of Venezuela and grows well with the treatment required by the other species.

Cypripedium Parishii, a striking species with leathery, dark green leaves. The stout, hairy scape bears three to six flowers. The sepals are pale green or straw color. Petals four to six inches long, drooping, narrow, and very much twisted, vinous purple in color. The lip is green, stained with purple. This species is not so amenable to cultivation as most of the genus, doing best here in light potting material with plenty of heat and water.

Dendrobium chrysoloxum suavissimum.—This flowers

much later than the type and differs from it in having a dark maroon blotch in centre of the golden yellow flower. It produces many flowered racemes from the top of the clavate, deeply furrowed bulbs, and will continue flowering from the old bulbs for many years. It makes a grand plant for decorative purposes and is very useful for cut flowers. Coming from the hot plains of Burmah, it requires considerable heat to make good bulbs. These must be thoroughly ripened by exposure to sunlight and air, taking care not to burn the leaves during the resting season. Only enough water should be given to keep the bulbs from shriveling.

Angræcum falcatum.—This is a small, compact Orchid, with narrow dark green leaves about three inches long, from the axils of which are produced many flowered spikes of pure white fragrant flowers, with a spur about three inches long also white. *A. densum* may only be a variety of this. The leaves are shorter, broader and more erect. The flowers are white, as in *A. falcatum*, but with much shorter spurs. These two kinds are native of Japan and are generally supposed to require a cool house, but they are doing well here in the East India house.

F. Goldring.

Notes from the Arnold Arboretum.

BY far the most beautiful of the American *Andromedas* is *A. speciosa*. It is a native of the coast country from North Carolina to Florida, where it is found along the borders of the Pine-barren ponds, and, in spite of its southern origin, is perfectly hardy and at home here. It is a low shrub, never more than three or four feet high, with bright green foliage, which, in one variety (var. *pulverulenta*), is chalky-white, with a dense glaucous bloom. The flowers are pure white, a third of an inch deep by as much wide when expanded, and appear in large racemed fascicles, on naked branches of the preceding year. This charming plant has been in cultivation since the beginning of the century, and once was a great favorite in English gardens. In this country it is rarely met with in cultivation, in spite of its many attractions. It is now blooming copiously.

Not less attractive in its way is *Philadelphus microphyllus*, the smallest of the family, and a native of the mountains of southern Colorado and New Mexico, whence it was introduced into cultivation by the Arboretum a few years ago. It is a twiggy shrub, with slender stems two or three feet tall, with broadly ovate, hairy leaves, half an inch long, dark green and shining above, pale below, and small white, deliciously fragrant flowers, which no one who has ever climbed over the cliffs above the Grand Cañon of the Arkansas in the early days of July, will ever forget. *Philadelphus microphyllus* is perfectly hardy here, and an excellent little shrub for the rock-garden. The earliest *Ceanothus* to flower here (where none of the handsome California species are hardy), and ten or twelve days earlier than the common New Jersey Tea (*C. Americanus*), is *C. ovalis*. It is a common western species, only just reaching New England on the eastern shores of Lake Champlain, and probably very rarely cultivated, in spite of the fact that it is a useful low shrub, two or three feet high, of compact habit, good foliage, and handsome, white flowers, which come later than those of most shrubs—a valuable quality.

It is the habit of late and continuous blooming through the summer which gives value to the Allsaints Cherry, a European plant of very uncertain origin. It is a handsome dwarf tree, with long, pendulous branches. In nurseries it is generally grafted standard high on the common Cherry, when the branches soon sweep the ground. It produces through the season large, white, solitary flowers, on long, drooping stems, ripe fruit and flowers appearing on the tree at the same time. The Allsaints Cherry makes a very pretty specimen for a small lawn or garden. It is very rarely seen in this country.

Acanthopanax spinosum (*Aralia pentaphylla*) is now in flower. It is a very hardy Japanese shrub, which attains a height here of eight or ten feet, with wide spreading, arching, pale gray branches, armed with stout, solitary prickles, and covered with bright green, shining, five-parted leaves, five or six inches across, and borne on long clustered petioles. The small green flowers, in axillary, long-stemmed umbels, are not showy, and the value of this plant lies in its graceful habit and handsome and abundant foliage. It is an excellent subject to plant on a rocky bank.

Rosa repens is probably a form of the common and widely distributed European Field Rose (*R. arvensis*), although abundantly distinct for garden purposes. It has trailing, prostrate branches, eight or ten feet long, handsome dark

green foliage, and small, pure white, single flowers, solitary or two or three together. It continues to expand its flowers during several weeks and is one of the most attractive of the foreign Roses in the collection. It is well suited to plant on banks or among other shrubs, where it can send its long stems freely over them, or it is an exceedingly attractive plant when trained to a tall stake or to a pillar.

Many of the American Greenbriers (*Smilax*) are handsome climbing plants. They are never cultivated, however, although some of the strong growing species can be made to serve a good purpose in preventing access across the boundaries of parks or pleasure grounds. Neither man nor beast will try to break through a well-grown mass of the tough, horribly armed stems of the common Greenbrier, or Bullbrier (*Smilax rotundifolia*), one of the handsomest plants in leaf found in the Atlantic forests.

Another species peculiar to the south, *S. Pseudo-China*, is blooming here now, and although its stems are unarmed, or nearly so, they are so tough and become so interlaced, that passage through them is almost impossible. It soon spreads from the tuberous root-stocks, sending up stems ten or twelve feet long, covered with large, dark green, ovate-oblong, sharply pointed leaves, the small clusters of greenish flowers and handsome black fruit on slender stems three or four times longer than the petioles. There are still several species of these interesting plants to introduce into cultivation and much to be learned of their horticultural capabilities.

Several of the Viburnums and Dogwoods of the Northern States are now in flower. Among them are shrubs which are unsurpassed in beauty of foliage, or of flowers, or of fruit. They can all be easily cultivated and all thrive in any variety of soil and in all exposures. Where great masses of low foliage is needed in public parks, or where shrubberies are liable to suffer from neglect, as in city squares, or on railroad embankments, or where the adornment of country roadsides is undertaken, these and other native shrubs should be selected for the purpose, rather than exotic garden plants, which always require considerable attention to keep them in good order, and which, often fastidious about soil, are liable to be attacked by insect and fungoid enemies. Our common native shrubs, however, are very rarely cultivated. A few years ago they were completely unknown in nurseries and entirely neglected by planters. Some attention has been drawn to them lately, but they are still rare in nurseries, and it is impossible to obtain them in large quantities. Such plants are easily and quickly raised, and a demand for them will soon create a supply. Attention has already been directed, in an earlier issue of these notes, to the beauty of *Viburnum Lentago*. Among the species in bloom a few days later are *Viburnum dentatum*, the Arrow-wood, a compact shrub, with erect branches eight or ten feet high, ample, sharply toothed and strongly veined leaves, and broad, peduncled cymes of white flowers, which in the early autumn are followed by bright blue, handsome fruit. *Viburnum cassinoides* grows six to ten feet high, in the northern swamps, which are its home. It has handsome, leathery, opaque, or dull, ovate, generally entire leaves, and broad, flat cymes of yellow-white flowers. This is one of the handsomest shrubs in the Northern States. It is easily cultivated, and soon grows into a round-topped, spreading specimen, flowering with the greatest profusion. *Viburnum acerifolium* is a smaller plant than either of those already mentioned, rarely exceeding a height of three or four feet on the rocky wooded hillsides where it abounds in the northern States. It is a plant of compact habit, producing freely small, long-stemmed clusters of white flowers, but its greatest beauty is in the rich, deep claret color which its handsome, three-lobed leaves assume late in autumn.

Among the native Dogwoods now in flower the handsomest, perhaps, are *C. alternifolia*, a shrub-like tree with wide spreading branches and a flat top, the alternate leaves crowded toward the ends of the branchlets, and open, wide cymes of pale yellow or white flowers, followed by deep blue fruit, with reddish stalks; and *C. circinata*, the round-leaved Cornel, a compact shrub six to ten feet high, with green, warty-dotted branches, large, round-oval, pale green leaves, four or five inches across, woolly on the lower side, flat cymes of rather large flowers, and light blue fruit. This is certainly one of the most attractive of all the Cornels.

Cornus paniculata, the Panicked Cornel, a tall, spreading shrub, often ten or twelve feet high, with smooth, gray branches, taper pointed, ovate-lanceolate leaves, and cymes or panicles of pure white flowers, which are produced in the greatest profusion, and quite cover the plant at this season. The handsome fruit is white. This is a very common and widely distributed northern plant found along the borders

of streams and abounding on the margins of lowland woods and thickets. No shrub is more easily cultivated, and none is better suited to grace a park-plantation in the Northern States; *Cornus stolonifera*, the Red Osier, with its bright, red-purple, annual shoots, and long, pale foliage, is a useful plant for general planting. The flowers are pale yellow, produced in small, flat cymes, and have the merit of appearing later than those of most of the Dogwoods. The fruit is whitish or lead color. It is a very common northern shrub, found in the wet borders of swamps and in low woods. The habit of this plant of spreading by prostrate or subterranean shoots, and thus quickly forming broad clumps, which sometimes reach a height of six feet, makes it a useful plant for covering rapidly the ground among trees or larger growing shrubs, while its brilliantly colored branches add interest and variety to a plantation in winter. But by far the handsomest native shrub now in flower is the common Elder (*Sambucus Canadensis*). It is such a familiar object in every northern landscape that few persons realize that the Elder possesses all the qualifications of an ornamental plant of the very first class—hardiness, vigorous and rapid growth, good habit, pleasing foliage, handsome and conspicuous fragrant flowers, opening at a time when nearly all trees and shrubs have passed the blooming period; and fruit even handsomer and more conspicuous than the flowers which precede it. Few plants are better worth cultivating in a large garden or park, and yet, with the exception of the ugly yellow-leaved variety, it is seldom cultivated; and most gardeners of the modern school would consider it a weed to be exterminated if, by chance, it should spring up along fence lines, where birds often sow it, and where, if the ground is moist, it soon forms splendid masses of shrubbery. There is a form with deeply cut leaves which will interest persons fond of novelties, or of plants of peculiar or abnormal growth.

The very latest of the Thorns to bloom here is an American species, the so-called Washington Thorn (*Crataegus cordata*), now in full flower. It is a handsome small tree, sometimes twenty-five feet high, and perfectly hardy here, although it is a southern plant, not found growing spontaneously north of Virginia and Kentucky. In the mountainous parts of these states and of those further south it is a common inhabitant of rich woods. It has brightly shining, broadly ovate or triangular, deeply cleft, serrate leaves, on long, slender petioles, rather small flowers in simple corymbs, and small, but very showy, bright scarlet fruit, which hangs until the early winter. The autumnal coloring of the foliage, which does not change until very late, is brilliant and beautiful. *Crataegus cordata* is one of the most distinct of the American Thorns, and one of the best small trees which can be planted in Northern gardens and shrubberies. It blooms only a few days later than *Crataegus tomentosa*, an Alleghanian and western species, which must not be confounded with some of the pubescent forms of *C. coccinea*, to which many recent writers upon American botany have improperly referred this Linnean species, which does not occur in the Northern and Eastern States east of western New York. *C. tomentosa* may be readily distinguished from any of the forms of *C. coccinea*, not only by the fact that it flowers many weeks later, but by the pale gray branches, almost entirely destitute of thorns, by its thicker and more pubescent leaves, without glands, gradually contracted into a stout, margined petiole, and densely pubescent on the under side, as are the calyx and stems of the inflorescence. It may be distinguished, too, from forms of *C. coccinea* by its broader and looser corymbs, and by the extremely disagreeable odor of the flowers, and by the smaller, oblong, upright fruit, which does not ripen until long after that of *C. coccinea* has fallen to the ground. *C. tomentosa* is perfectly hardy, making in cultivation a small, handsome tree, with spreading branches and rather a flat top. The orange tints which its leaves assume in late autumn are attractive.

It is hopeless to undertake to unravel the confused synonymy of the multitude of garden forms of *Philadelphus*, or even to refer them to wild types, so mixed has been the blood of the different species through years of cultivation, and so unstable are many of the characters depended on to separate the different species. It is well to record, however, that the earliest to flower in the collection, by ten or twelve days, is the Manchurian and Japanese plant known as *P. Schrenkii*, and now considered by Maximowicz as one of the varieties (var. *Satsumi*) of the very variable and widely distributed *P. coronaria*, the common Syringa of gardens. By far the handsomest of the early flowering Syringas in the collection, however, is that known in gardens as *P. speciosus*. It is a tall, erect growing plant, covered with large, pure white flowers, and evidently a hybrid or a variety of the American *P. grandiflorus*.

The Forest.

Notes on the Longevity of Coniferous Tree Seeds.

LOUDON says European Larch seeds will not germinate after they have been a few months out of the cones. Our experience proves that they will germinate perfectly well eighteen months, and passably well thirty months, after leaving the cones. The belief seems to be general that White Pine seeds become rancid and will not germinate after the first season. Our experience proves that they will germinate thirty months after leaving the cones.

I think further experience will prove that the seeds of Colorado Conifers, and seeds of coniferous trees in all dry climates, will preserve their vitality still longer. We had a sack of *Pinus ponderosa* seeds from which we sowed five years in succession, and, to all appearance, they germinated the fifth year as freely as the first. Seeds of *Picea pungens* and *Pseudotsuga Douglasii* have germinated with us, apparently, as well the third year as the first. I regret that we had not seeds to try the experiment longer.

Practice has changed wonderfully during the last half century in this direction, and now, instead of keeping seeds in the cones, they are taken out as soon as the cones are gathered and dried, yet some writers on forest subjects still recommend keeping the seeds in the cones till time for sowing. But how can Fir seeds be kept in the cones? The cones fall in pieces as soon as the seeds ripen. They will hold together, it is true, if collected before the seeds are ripe, but in that case the cones will become mouldy and injure the seeds. There may be a few species of Pines which will keep longer in the cones than out, such as *Pinus Banksiana*, *P. contorta* and *P. tuberculata*, which hold the hard, dry cones on the trees for many years; but these are kinds which are seldom, if ever, used, and of little value. The White, and many other Pines, the Spruces and Arbor-vitæ, hold the cones on the trees for a short time after the seeds have ripened, but they shed all the seeds as soon as they are ripe, in August, September and October. I do not see how the seeds can be benefited by being left in the cones after they have ripened, nor how they can be kept as safely in cones as in bags.

It is fortunate for the forestry of this country that seeds of forest trees can be kept for years in this manner, otherwise a succession of plants could not well be kept up, for forest trees do not produce seeds every year, even when the seasons are favorable. In the year 1884 I scanned the White Pine trees closely from the head of Lake Michigan to the New England coast, thence from Rhode Island north to the Canada line, thence through the Adirondack Mountains, along the Black River, and into the White Pine regions in Pennsylvania, and saw no trees producing cones. We then sent a collector up into northern Wisconsin and the Michigan peninsula, but he found that the trees were not producing seeds. It is often the case that when forest trees fail to produce seeds in one part of the country they are abundant in another locality; but in this case the only exceptions I heard of were one locality in the Lower Provinces of Canada, and the cultivated trees west of Lake Michigan. What is true of the White Pine is measurably true of all other forest trees, and now, when so much is written on the subject of forestry, it is surprising that so little is written on this branch of the subject. Even if the seasons are all favorable one can hardly expect a crop of White Pine seeds oftener than once in three years. One year is needed for the blooming of the male and female flowers and the fertilizing of the embryo cones, the next year for the growth of the cones and the perfecting of the seeds, which draws so heavily on the vitality of the trees that they require the third year to recuperate and form blossom buds to continue the blossoming the year following. Wherever I had an opportunity to examine, as in New England, on the Adirondacks, and in the Pine belt in

Pennsylvania, I found the trees all well set with embryo cones, and our collector reported the same for the region south of Lake Superior, and as these embryo cones were already fertilized we were certain of a crop of seeds the next autumn. Of course new seeds are safer and better than old seeds, and will germinate quicker. We make it a rule to sow old seeds thicker than new, and either to sow them earlier or soften them by soaking before we sow them. Robert Douglas.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—I have been starting a small plantation of forest trees and meet various difficulties. I would like some of your practical correspondents to let me know how seedlings are introduced into large plantations. White Ash, for instance, reaches the ground in the spring and is about the size of a knitting-needle, Box Elder, Elm, Mulberry the same, Cottonwood only a little larger. Do planters trust fifty acres of these set four feet apart to horse cultivators with ordinary drivers? I have hard work to get a man who can see them when working with a hoe. Are the prairies free from weeds? Are large plantations of nuts made in the fall of the year or of acorns?

I have tried a few acres, but find the nuts are so late to sprout that the weeds hide them, and am almost tempted to plow the whole ground early in the spring and cultivate it to get rid of weeds, and expect that the nuts not having started will be none the worse; otherwise keep the nuts in a pile till spring. I find Ash and a good many other seeds very hard to get started; hardly one planted last fall or early this spring is yet showing this second of June. Ash, Maple and Cherry seeds in the ground since last spring were up a week ago. Perhaps other readers will be interested in a reply.

Norwood, Ontario.

G. M. Grover.

[White Ash, Box Elder or Elm seedlings the size of knitting-needles are too small and weak for forest planting. One year old first-class seedlings of Ash or Box Elder should be the size of a lead pencil or larger, while second-class seedlings of the same age sold in nurseries at about half the price of first-class seedlings, although generally considered too delicate for general planting, should be at least three times the diameter of a knitting-needle. White Elm seedlings one year old reach a height of from twelve to twenty-four inches the first season, but are more slender than Ash or Box Elder in proportion to height. It has been demonstrated by Mr. Robert Douglas, who has successfully planted and grown more than a thousand acres of forest trees in the rich prairie soil of southern Kansas, and by other tree growers, that one year old seedling trees can be planted and kept free of weeds with horse cultivators in the hands of ordinary laborers. In Mr. Douglas' plantations, except in the case of a few acres, no cultivating whatever has been done by hand. The secret of success in forest planting of this sort is to get the sod thoroughly rotted before the trees are set, to use only strong, well selected plants, and to keep the weeds under from the start. If the young trees once get smothered in a growth of tall perennial prairie weeds the case is hopeless, and there is nothing to do but to plow the whole plantation up and make a new one. It is practically impossible to raise a forest on rich arable land by planting acorns or nuts where the trees are to stand. Grasses and weeds will smother the seedlings as they appear, or will so hide them that it will be out of the question to cultivate the field without destroying the trees. Nuts can only be planted successfully, in this country of vigorous weeds, in light sod land where the growth of the grass will not overtop the young trees, or among other trees which partially shade the ground and prevent the growth of weeds. If a forest of Oaks or Walnuts is to be raised on prairie or other rich land, yearling or two-year-old transplanted seedlings should be set and thoroughly cultivated until they shade the ground and prevent the growth of weeds. In an article printed in Number 2 of GARDEN AND FOREST, Mr. Douglas gives practical directions for raising different forest trees from seed.—Ed.]

Hardy Fruit Trees.

To the Editor of GARDEN AND FOREST:

Sir.—Under this heading I have read with care the suggestive paper, by Mr. F. W. Burbidge, in the *Gardeners' Chronicle*, and the editorial notes on it in GARDEN AND FOREST. The articles are timely and well meant, but the whole facts as to the character of the fruits of the Volga, and their singular capacity for adapting themselves to exceedingly varied climates, are not given.

As to the size, beauty and quality of the Apples of the Volga from Kazan to Sarepta—a distance by the river of near one thousand miles—I will only say that they will surprise the horticultural tourist who examines and tests them as we did in the autumn of 1882. If we were confined alone to the many varieties of the Oldenburg, Apont and Skanka families they would give a list difficult to equal in England, though in quality they are far excelled in the United States.

As to their adaptation to varied climates a few examples may be profitably considered. Taking up the latest edition of Hogg's *Fruit Manual*, we find that ten varieties of the Russian Apples, several of them from the Volga, are declared to be perfectly satisfactory in tree, foliage, habits of bearing and character of fruit in England—viz., Borovitsky, Sugar Loaf Pippin, Alexander, Constantine, Peach, Malakovna, Red Transparent, Red Astrachan, Court Penduplat, White Astrachan and Muscovy. Again, at Pomona, in south California, I found five varieties of Russian Apples—some of them from the Volga—perfect in tree, foliage and fruit, standing among, so-called, American sorts that were dwarfed and scrubby in tree, and imperfect in foliage and fruit. Their thick foliage and pubescent fruit seemed to perfectly fit them to endure the great summer heat and the great changes in temperature of the day and night. In the upper valleys of California we also find the Sweet Anis of the Volga—perfect in tree and fruit—growing beside the Orange and the Fig.

Still again, so far as tried, the Russian Apples, Pears and Cherries stand the summer heat of Alabama, Florida and Texas better than any other varieties except those of China.

To all this we must add that, next to the Siberian Crabs, the Apples of the Volga endure the trying summers and winters of Minnesota, north Dakota, and even Manitoba, most perfectly.

J. L. Budd.

Recent Publications.

Agriculture in some of its Relations with Chemistry. By F. H. Storer, S.B., A.M., Professor of Agricultural Chemistry in Harvard University. 2 volumes, 8vo, pp. 529 and 509. New York: Charles Scribner's Sons.

The lectures comprised in these volumes were delivered originally to small classes of students who represented two distinct types; (1) young farmers and the sons of farmers familiar with ordinary farm practice, but desirous of acquiring some knowledge of the sciences upon which the art of agriculture rests, and (2) city-bred men, often graduates of the academic department of the University, who intended to establish themselves upon farms, or to occupy country-seats, or to become landscape gardeners. The lectures, therefore, were not prepared for advanced students in chemistry, and the most abstruse of them are easily within the comprehension of one who has a fair elementary knowledge of that science. This does not imply that the more profound problems in agricultural chemistry are ignored, for these are clearly and exactly stated, and the results of the most recent and trustworthy investigation, both in Europe and America, are set forth with ample detail. Indeed, we know of no other work in which those fundamental problems of chemical science, upon which the practice of agriculture is based, are more skillfully grouped and presented. And this fact makes it the most instructive and helpful manual that has appeared in this country since the publication of Professor Johnson's "*How Crops Grow*" and "*How Crops Feed*." Naturally enough the subject of fertilizers with their modes of action upon various soils and crops occupies large space, but this does not exclude the careful treatment of such subjects as Tillage, its Purposes and Processes; The Movements of Water in the Soil; The Atmosphere as a Source of Plant Food, and The General Relations of the Plant to Soil and Air. This means not only that the lectures are of interest to farmers and gardeners, but to all persons who are attracted by the mysteries of vegetable life which are constantly going on about them.

There are few forehanded farmers who do not read some agricultural paper, and the teachings of the best of these journals are usually abreast of the advance in scientific discovery. But in addition to these indispensable aids we can think of no

better book to keep lying within easy reach than this one of Professor Storer's. Every day the thoughtful farmer is confronted by difficult problems in actual practice, and for nearly every one of these will be found a reference in the very complete index to these volumes. The book has, to our knowledge, proved of signal service in just such cases as a manual of daily practice. It would be a great advantage to every country home if its owner would place himself in just such relations to this book. If the true requirements of plant-growth were better understood we should see fewer hungry lawns, and spindling trees, and sickly shrubberies, and famished gardens generally. Some of the students to whom these lectures were delivered were in course of training for the profession of landscape gardeners, and knowledge like that imparted here should be an essential portion of the equipment of every artist of this kind. This knowledge, however, should not be confined to landscape gardeners or to those who till their acres for profit only. Country life loses half its charm to those who take no inquisitive interest in the processes and conditions of plant-life and development. The owner of a country-place who cannot give intelligent directions on methods of enriching his land with plant food and making that food available, or on the best mechanical preparation of his soil for a given purpose, or on the kind of cultivation best adapted to special cases, may derive some pleasure from his possession, as may the owner of a yacht who has no skill to sail her. But the keenest delight in a rural home only comes from an intimate acquaintance with the soil itself and an intelligent appreciation of its possibilities of production. To such a one the lawn, the pasture, and even the kitchen garden, offer fields for experiment and study that are ever fresh, and a new interest is added to every plant that grows for ornament or use. No safer guide in the wholesome studies above alluded to can be found than this manual, so that it can be commended not only to thoughtful farmers, but to all others who find recreation of mind and body in the abounding vegetable life of the fields and in searching for the laws under which this life is ordered.

Periodical Literature.

In the May number of *The Portfolio* is given the first installment of a long description of Charlecote Hall in Warwickshire, the courtyard of which was pictured in GARDEN AND FOREST a few weeks ago. The text is partly architectural, partly historical in character, and the illustrations are numerous and pretty. The largest among them will especially interest our readers, as it gives the reverse of the view with which they are already familiar, showing the house from the terrace-walk beyond the courtyard wall. The second installment of the article does not appear in the June number of the magazine, but will doubtless not long be delayed; and in it we hope to find a description of the park which Shakespearian legend has made so famous.

In *Good Words* for June Mr. Grant Allen writes a pleasant chapter on "The Breadstuff of the Desert." His subject is of course the Date Palm, and in a lively and popular way he gives much information with regard to its manner of growth and the multifarious uses to which it is put. As he explains, this tree does much more than furnish the Arab of the desert with his chief—almost his only—article of food. "He eats it," says Mr. Allen, "he drinks from it, he lives under it, he burns it, he buys with it whatever he needs from other regions. It is his all, his estate, his heritage, his banker." Fortunately for him it grows best where no other tree will thrive; and by one of nature's seemingly deliberate economies, it ceases to grow well where other trees begin to flourish. The article is accompanied by a number of illustrations, but no one of them reveals the full beauty of the Date Palm as it stands in the memory of all who have been fortunate enough to see it in its African home—at once majestic and lovely, noble in its simplicity of form, yet consummately graceful in the way it yields in varying degree to the varying touches of the wind. A northern tree which is sturdy enough to be called, under any conditions, stately and majestic, always keeps its sturdy air, preserving an almost unyielding trunk even in the strongest wind. But the trunk of the Palm is superbly dignified in its apparent rigidity when a light wind tosses its feathery crown, yet bends deeply to a stronger wind, gaining grace for the moment by some sacrifice of majesty. It is this constant change in air and expression, this alternation of the effect of strength with the effect of pliancy, this look as of now dominating the elements and now being dominated by them, which makes the Palm so attractive to the traveler's eye and does so much to compensate it for the fact that it finds no other tree in the wide, level landscape.

Notes.

Prices of cut flowers are so unsteady at this season, that our weekly reports of the Retail Flower Market will be discontinued until the Fall trade begins.

The place for holding the August meeting of the Society of American Florists has again been changed. The society will meet in the Cooper Union and the exhibition will be in Nilsson Hall.

The florists and gardeners of Boston and vicinity have planned for a holiday on July 24th. It will take the form of an excursion down the harbor on a steamer, with a short landing on one of the islands. The affair will be under the auspices of the Gardeners' and Florists' Club.

It appears from a recent issue of the *Revue de la Horticulture Belge* that the flowers of the Locust (*Robinia Pseudacacia*) are considered a delicacy for the table in Europe, being served in *pâtés*. The flavor is pronounced delicious. The flowers of the European Elder (*Sambucus nigra*) are sometimes used in the same way.

A convention of the Cranberry-growers of Cape Cod will be held in the town of Sandwich during the present month for the purpose of discussing the necessities of this already important and rapidly developing industry, and especially to devise methods for the more general introduction of the Cranberry crop into European markets.

It is gratifying to note the constantly increasing use of the Gloxinia as a florists' flower. It has been adopted generally by the florists of Boston as a standard variety in their summer stock. Its rich coloring and graceful form recommend it for use in floral designs for all occasions. It is very easily bruised, but if handled carefully will keep for a long time.

Good blue flowers which can be used for cutting purposes are never abundant, but more blue is now seen in the windows of Philadelphia florists than usual, because the beautiful *Delphinium formosum* is now at its best and a prime favorite. A few of these Larkspur sprays with any yellow flower, especially with Roses like *Perle des Jardins*, *Maréchal Neil* and *Sunset*, or a sprig of it in a cluster of *Aquilegia chrysantha*, produces a most charming effect.

Professor Asa Gray left by will the copyrights of all his books to the President and Fellows of Harvard College, for the benefit of the Gray Herbarium, on condition that proper provisions be made for their renewal and extension by new editions, continuations and supplements as might be necessary to increase and prolong the value of the bequest. His herbarium, unequalled in North American plants, and library, he presented to the college many years before his death.

In the collection of Orchids in the recent exhibition in Paris, which won for Sander, of St. Albans, the *Grand Prix d'Honneur* offered by the President of the Republic, was a noble specimen of *Cattleya guttata Leopoldi*, more than four feet high by as much across, and bearing more than a hundred flower-stems, splendid great specimens of *Lalia purpurata*, and innumerable forms of *Odontoglossum crispum*, *O. vexillarium*, *O. Harryanum*, and of *Cattleya Mossiae* and *C. Mendeli*.

All the plants remaining on the estate of the late C. M. Hovey, at Cambridge, Mass., were sold at auction on Monday, July 9th. Many of these plants were seedlings, and rare specimens collected by Mr. Hovey during nearly half a century, and with which he never could be induced to part. The sale attracted many buyers, mainly florists, from all parts of New England, and prices realized were good, considering the condition of the stock, of which the greater part gave evidence of sad neglect.

The Promenade along the shore of East River Park, in this city, will be a useful and attractive feature of that work. It will be twenty-seven feet wide, and but a few feet above the mean water-level, so that the cooling influence of the tides, which always flow swiftly at this point, will be most grateful in summer weather. When the walk is extended along the entire shore, including the newly acquired addition to this Park, it will be large enough to accommodate great numbers of visitors from a district which will soon be densely populated.

A common European Hawkweed (*Hieracium aurantiacum*) is now pretty thoroughly naturalized in some places in the Eastern States and is likely to become a troublesome weed here. In Greene County, in this State, it has already taken

almost complete possession of some fields, and as this plant spreads from stoloniferous, underground stems, it will probably spread as fast and be as difficult to eradicate as the White Weed or Daisy. It is a hairy plant, with a cluster of narrow leaves near the ground and a simple naked scape a foot or more high, bearing a head of deep orange-colored or flame-colored flowers.

In commercial horticulture all good flowers are scarce, especially white ones. This is partly due to the hot week in late June and partly to the fact that this is "between seasons" for those who grow flowers for the wholesale market. That is, the Rose plants, for example, which did service last winter and spring, are now thrown out, and younger plants and new soil are introduced, and the success or failure of the supply next winter is often determined by the treatment of the stock at this critical period. Sickly plants, badly prepared soil, a lack of watchfulness now, mean a scant crop of inferior flowers next season.

A prominent nurseryman stated, recently that the reduction of freight-rates on nursery stock brought about by the efforts of the committee appointed by the American Association last year would save to customers and the trade \$50,000 during the present season. The reduction applies only to stock packed in boxes and thus puts a premium on proper packing. Such stock is now carried as third-class freight, instead of first-class, as it was formerly rated. Some of the arguments used to secure this concession were that boxed stock can be roughly handled without injury; that when transported with ordinary dispatch it is in no risk of damage, and that the carrying of nursery stock brings in time more freight in the shape of fruit.

M. Beurdeley, in a report made recently to the Horticultural Society of France, invites the attention of horticulturists to the results of his experiments with male and female plants of Asparagus. He finds the former the more productive, seventy-six shoots having been produced by twelve crowns of the female plant, or an average of nearly six and one-half shoots for each crown, while twenty crowns of the male plant yielded 244 shoots, or an average of over twelve shoots from each crown. The experiments were only carried on during a single year, but this is a subject of such practical importance to gardeners, that, as the *Revue Horticole*, from which this information is derived, suggests, they should be continued on a larger scale and during a period of several years.

A correspondent of the journal published by the *Société des Agriculteurs* in Paris sends some interesting information with regard to the very large trade done in Cauliflowers from Roscoff and other places in Lower Brittany. He says that every day, for a period of about two months, seventeen or eighteen trucks, each holding about four tons of Cauliflowers, are dispatched from four or five stations, thus making a total of over 4,000 tons of Cauliflowers during the two months. About a thousand plants go to the ton, and the average price is \$17.00 per ton, or something under \$70,000 for the whole lot. The bulk of them are shipped at Nantes for Bordeaux and the southern markets, or at Cherbourg and Havre for England, though a great many trucks go to Paris. An enormous profit in this trade is made by the middlemen, and the correspondent not unreasonably asks whether, with a little management, a large proportion of this might not be secured by the growers themselves.

At the Cincinnati Exposition the American Forestry Congress exhibits a section of a Tulip tree with a chronological table of its history, showing that the tree began its life when Queen Elizabeth came to the throne in 1558, was a stout sapling when Saint Augustine was founded, and gave respectable shade when the Pilgrim Fathers landed in New England. When La Salle saw it on the banks of the Mississippi in 1682 it had become a tree of royal stature; when the United States began to exist as an independent nation it was four feet in diameter and when cut for the Cincinnati Exposition it had added another foot to its diameter, being five feet in 330 years. The Forestry Congress also exhibits a chart with many instructive illustrations of the present condition of our forest interests, both state and national. The Division of Forestry of the Department of Agriculture exhibits at the same place a collection of forest seeds; sections of 100 of our most important forest trees; 200 volumes on the subject of forestry in different languages, showing that there is such a literature; thirty-six heliotype pictures illustrating the effects of deforestation and the mode of reforestation in the French Alps, and a collection of tools used in European forest planting and management.

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The Arid West and Irrigation.

THROUGHOUT the greater part of a region covering something like one-third of the total area of the United States, not including Alaska, the annual rainfall is so small that, except in spots here and there, the land is not arable unless artificially watered. This region has its western boundary at the Sierra Nevada, and, in some portions, at the Coast Range of the Pacific; it comprises the country from the northern to the southern frontier, including the great basin between the Sierras and the Rocky Mountains, the high plains to the eastward of the latter, and a large portion of western Texas. Until within a comparatively few years the most of this great expanse has been known only in the vaguest way and it was regarded as a hopeless desert, fit only for mining, or, in a limited way, for cattle ranges. To be sure, over a generation has passed since the Mormons turned the heart of this region into a rich garden, and for years Utah has possessed a population sufficient for statehood, so far as numbers are concerned. Utah has afforded a practical example of what might be accomplished throughout a large proportion of this region, much of which is even superior to the Salt Lake Valley in natural advantages of climate and water supply. But our people have been slow in applying the experiences of one locality to the requirements of another, and the Mormon lesson long went unheeded.

Now, however, this region is well penetrated by trans-continental railway lines and their branches, and its characteristics have become more widely known. The most of the lands of the national domain that are arable under natural conditions are now occupied; the crowding immigration has pressed its front ranks well forward into the arid belts, and called attention to the capabilities of the land there. The next chapter of the greatest migratory movement of modern times, the settlement of the American republic, will be the more complete occupation of the Pacific slope and the filling up of these great inland arid regions that recent investigations show to have been well inhabited by a sedentary aboriginal population. The development of the resources of a third part of our national

territory, suddenly found to be of great value instead of substantially worthless, is therefore a matter of vital importance and demands careful consideration as to the most efficient means of carrying it out. Even though but a fractional proportion of the entire area should prove fit for cultivation, it would still very considerably extend the immigration-sustaining capacity of our country, for history and prehistory both show us that irrigated lands sustain the densest of populations.

Although irrigation has accompanied the tilling of the ground from time immemorial, and probably, indeed, gave birth to agriculture, and therewith civilization itself, and while vast regions of our own continent were in pre-Columbian times made fertile thereby, still it has been comparatively unknown to the American husbandman until very lately. Now, however, its advantages are beginning to be perceived even beyond the confines of the arid districts. In the extensive market gardens about Boston, for instance, it is becoming universal, and in the east we may expect to see it applied with profit not only to many branches of horticulture, but the enormous augmentation of grass-growth which it produces will probably cause it to be introduced wherever practicable on the hay farms that constitute the chief agricultural interests in some of our Northern States, just as it has long been practiced for the same purpose in Germany and other portions of Europe under conditions of precipitation similar to ours.

Within the past few years irrigation has made enormous advances in all quarters of the great arid region of the west, and it is estimated that there are now over 14,000 miles of main canals, with over 200,000 miles of lateral, or supply ditches, representing an outlay of many millions of dollars, and bringing thousands of square miles under cultivation. Great enterprises have been carried out, and others are in execution, or have been conceived, in Colorado, Kansas, Montana, Idaho, Utah, California, New Mexico and Arizona, and the transformation in the aspect of extensive tracts in these states and territories has been magical. There is no better field for capitalists to-day, insuring large and certain profits, than in the carrying out of irrigating works in those parts of the United States. Unlike railways, the operating expense is slight. The development of the arid districts would undoubtedly be much more rapid were it not for the fact that the construction of canals, dams, etc., except where the natural opportunities are exceptionally easy to be availed of, requires an original outlay far beyond the reach of the average settler, and can only be effected either by the aid of capital, or through co-operative work, which is rarely practicable among settlers, except in the case of colonies, as illustrated by the admirable examples set by the Mormons in this respect.

The greater portion of the arid west is fortunately adapted, in its physical conformation, to the making arable, through irrigation, of a large and widely distributed proportion of its entire surface, consisting, as it does, of alternations of mountains and valleys. New Mexico and Arizona, particularly, are characterized by detached groups of mountains rising from broad valleys, forming great and uniformly sloping plains. These mountains cause precipitation and distribute the rainfall over the plains below, where it normally runs to waste in the great gullies it has worn in the land. Were it possible to store up all the rain that now flows away, every inch of these regions might be made productive. While that is impracticable, much more can be done in this way than is now hardly dreamed of. It is safe to assert that in all this region there is hardly a mountain chain or group where, in the neighboring plains, irrigation may not be practiced to a greater or less extent. It even seems by no means visionary to look for the day when, through various means available to modern ingenuity, the arid west will be made as proportionately productive as is the Atlantic slope, the dry uplands of the former utilized for

various desert products, such as fibrous plants and other growths now deemed worthless, and for sheep pasturage, etc., thus corresponding to the uses of the rocky hills and pastures that form a large proportion of the area of the latter section of our country. Valuable uses are constantly being found for land once worthless—as in the Cranberry bogs of Cape Cod and the great Henequen plantations of sun-parched Yucatan. Some time the day may come when it will be said: There is no desert! The encouragement of irrigation will hasten that day for our country.

Trees in Washington.

MR. PETER HENDERSON, in the last number of *Harper's Magazine*, describes the tree-planting which has been accomplished in the City of Washington during the last fifteen years. No less than 120 miles of streets, or 240 miles of trees, have been planted in that time; and in no other American city has street planting ever been attempted on anything like the same scale, or has produced results immediately so satisfactory. An examination, however, of the list of trees which have been planted, shows that the Commission who have controlled these plantations have been governed by the desire for immediate effect rather than for the permanent embellishment of the city. White Maples, for example, line fifty-five miles of streets, or nearly one-half of the distance planted; sixteen miles are planted with the Cottonwood, and ten miles with the Ash-leaved Maple or Box Elder. These are all excellent trees for the prairies of Nebraska or Kansas, where trees are needed that can grow rapidly in a dry soil, and where all other considerations are secondary to immediate results, but they are entirely out of place in a city of the architectural pretensions and of the climate of Washington. They are trees with brittle branches, and neither long-lived nor in any way suited to adorn the capital of a country like the United States, rich in trees unsurpassed in beauty and variety. Indeed, it would be difficult to select three deciduous trees in the forests of this country less fitted for this particular purpose. They are very easily and quickly raised; they are readily transplanted, and they grow with great rapidity. They soon become unshapely and unsatisfactory, however, and any city where the streets are planted with them will have a cheap appearance, whatever may be the character of its buildings. The number of fine trees which could be used to adorn appropriately the streets of Washington is considerable. The Tulip tree is perfectly at home in that climate. It is one of the noblest trees of the American forest. There are few more beautiful trees anywhere. The Commission have planted only 1,712 Tulip trees. Some of the American Oaks are admirable street trees, notably the Pin Oak, the Red Oak, the Willow Oak, the Scarlet Oak and the Shingle Oak. These all thrive in the neighborhood of Washington, and they are all trees which can be easily grown and transplanted. They grow rapidly, too, as does the Tulip tree, although less rapidly in youth than Cottonwoods and Soft Maples, but they go on increasing in beauty for a century, and might be expected to last in Washington for a much longer period even. The Commission have planted 273 Oaks all told, including some worthless European varieties. Only 832 Sugar Maples have been planted, although this is one of the best street trees in the United States, while ten miles of Norway Maples have been planted, in spite of the fact that it is in every way an inferior tree, and often disfigured in this country in summer by thrip. The White Poplar of Europe is one of the ugliest trees ever introduced into this country; 1,863 of these have been set along the Washington streets, or 600 more than the number of Honey Locusts used; yet the Honey Locust is an excellent street tree—in many respects one of the best which has ever been tried in this country for the purpose. The trees to which we have here called attention—and there are many others which might have

been selected in preference to those employed by the Commission—have all been successfully planted in towns in different parts of the country. In the town of Flushing, in this State, for example, where, perhaps, more than in any other in this country which we can now recall, there are lessons in street planting to be learned, both in regard to what trees to plant and what trees not to plant, there are rows of noble Tulip trees, and Pin Oaks, Willow Oaks and Lindens, which speak for themselves, and show how beautiful a well planted street can be made.

The trees planted in Washington have been badly selected, and the permanent results of these plantations cannot fail to be disappointing; the methods, however, of planting, of pruning and of protecting the trees adopted by the Commission, as described by Mr. Henderson, are admirable, and far ahead of anything which has been done in urban planting in this country. It is not surprising, therefore, that the immediate results obtained are so satisfactory.

IT now seems probable that the postage on seeds, cuttings, bulbs and roots will be reduced to at least eight cents a pound, which is half of the present rate, and the Postal Improvement Association, to whose efforts this reduction is largely due, still hope that the rate may be ultimately fixed at four cents, as it was made originally in the Senate Bill. By some oversight the words "plants and trees" were omitted in the bill, and it is to be hoped that it will be amended so as to include both of these, although, perhaps, the word "plants" would cover the entire case. It is a matter which should not fail for lack of definite language, and certainly there is no sound reason why plants should not share the advantages accorded to seeds and bulbs. If the Government can afford to carry one it can equally afford to carry the other. And there are special reasons why plants should have the preference. They are more perishable, and in places remote from express, the mails offer the only chance for speedy delivery. It has been urged by some nurserymen that a lower rate of postage would encourage the dissemination of undersized trees and thus injure the business. But with postage at one-half or one-fourth of the present rate, much larger trees could be sent for the same amount. To the argument that packages of small trees or shrubs are too bulky for convenience in the mails, it may be replied that we have seen mail packages of forest tree seedlings which occupied less space than the same weight of ordinary seeds or bulbs. In short, if cheap postage on seeds, bulbs and cuttings is a measure of public utility, a similar reduction on plants must prove even more beneficial to the people at large, and the Post-office Department can carry the latter with as little trouble and expense as it can carry the former.

We have reason to believe that the forest tree seedlings posted in one dollar packages by Robert Douglas & Sons have had a marked influence on forest planting. These seedlings are now growing in hundreds of places where not a tree would have been planted but for the opportunity thus afforded by the mails. We can think of no agency more effective in stimulating an intelligent and practical interest in forest planting than these cheap mail packages, and the enterprise deserves all possible encouragement.

If the reduction of postage on plants will enlarge this business in forest tree seedlings it will confer a benefit on the whole country, and certainly it would be a public wrong to neglect this interest while favoring others no more deserving, to say the least. If plants were overlooked by a mistake in framing the bill, there ought to be little difficulty in correcting it. If the word was left out advisedly and for the sake of crippling one branch of business in the interest of another, there is still more urgent reason why the people should demand its restoration, in the name of fair dealing, as well as for the general good.

The Gardens of the Alhambra.

IN our studies of landscape architecture we are so inclined by influence and tradition to turn to French, English or Italian examples for inspiration and guidance, that much of the work in other countries is lost sight of or neglected, although affording excellent opportunities for study. Spain, in particular, is almost unknown to the landscape architect of to-day; yet the work which the so-called barbarian Moors left behind them in that wonderful country is, in some respects, hardly excelled anywhere in the world. The Alhambra of Grenada is the best known and one of the most pleasing examples of the manner in which the Moors could treat a site with little natural promise. The city of Grenada is built in a ravine, following the course of the Darro, and spreading out into a plain at the foot of the Sierra Nevada. The last spur of the mountains was utilized by the Moors in the creation of a palace and gardens so beautiful of their kind that even the builders were fain to claim a celestial interposition in their behalf.

The street leading to the Alhambra turns from a broad plaza and winds up to the monumental gateway marking the entrance to the palace grounds. Inside of the portal the busy world and its cares seem to disappear, and one breathes the atmosphere of a fairy land which only Irving could rightly describe. Indeed, when in the midst of the gardens, it is at first difficult to say in just exactly what the charm consists. There is certainly no attempt at regularity. On the contrary, there is a studied irregularity observable on all sides. There is a wealth of green foliage, which is carelessly massed about the roadway so as to half disclose its charms and awaken the imagination, or scattered in a seemingly thoughtless manner along the base of the beetling cliff, or clustered on the brow of the steep, inclined roadway leading to the towers. Even the water, which is such a necessary adjunct to all Moorish work, is introduced in an irregular manner. On each side of the road is a dancing, babbling brook, cooling the air and cheering the senses, while tiny waterfalls shoot out unexpectedly from the side of a cliff, to suddenly disappear into a yawning underground conduit. All this work is entirely artificial, but it is so completely in accord with its surroundings, so thoroughly artistic in thought, that it possesses the unstudied charm of nature's best examples.

Altogether, the outer gardens of the Alhambra are as delightfully planned an entrance to a realm of fairy land as could be imagined. The Moorish landscape work and the picturesque mysteries of the palace are revealed little by little. There is no general vista, no all-embracing view, but the imagination is left to picture what is dimly revealed through the trees and across the fountains and under the wide arches, while, as in all Moorish work, the attention is held by unexpected beauties and half-disclosed attractions. This is the key note of the whole arrangement: to awaken interest by unexpected surprises and half-concealed vistas.

The gate-house at the entrance to the inner portion of the Alhambra is an ingenious bit of Moorish arrangement, grand and imposing in general aspect, but adapted to its semi-military purpose. The passage makes two sharp bends in the thickness of the ponderous mass, so as to effectually mask the way, and emerges beyond the gate-house into a steep roadway flanked by heavy battlements, disposed in such a manner as to block the view on all sides except towards the summit, where the Vermilion Towers close the vista with their picturesque solitude. The roadway ends in a broad, open terrace, with the old Moorish Wine Tower on the right and the ugly Renaissance structure erected by Charles V. blotting out the site of the original entrance to the Moorish palace, while all across the front of the terrace is a magnificent prospect over the ravine and along the banks of the Darro towards the *vega*.

It is impossible to say exactly what was the original plan of the Alhambra gardens. Undoubtedly the terrace

was much larger and there was a more magnificent entrance to the palace; but the large terrace, with quiet, shady avenues leading from it, was probably then, as now, the central feature of the scheme. The Moors had a rare faculty for understanding how to adapt their work to natural possibilities. They never neglected an opportunity to make nature help out art, and with their keen, poetic appreciation of beauty of form and color, it is not surprising that the Alhambra should be so wonderful in its charm.

Boston, Mass.

C. H. Blackall.

Foreign Correspondence.

London Letter.

THE most fashionably attended flower show of London is that of the Royal Botanic Society, Regent's Park, but yesterday's exhibition offered a new proof that while great floral exhibitions are increasing in popularity in provincial towns, their glory in London is fading before the increasing counter-attractions on every hand. The chief features were, first, the Orchids, which have seldom been seen in greater abundance or of better quality; and secondly, the hardy, herbaceous flowers, which made quite as fine a show, and certainly seemed to have a greater attraction for the crowd.

For many years these summer exhibitions at Regent's Park have carried the palm for tasteful arrangement and splendid specimens. But I looked in vain for the fine Clematises of Jackman, the gigantic trained Roses of Turner and the Pauls, the huge specimen New Holland plants from Jackson and others, and many more fine things which used to adorn these summer shows. Exhibitors say it no longer pays to show these things, and, therefore, we must be content with more easily grown plants, such as Pelargoniums, tuberous Begonias, Calceolarias and Petunias. The present all-absorbing interest in Orchids is, no doubt, largely accountable for this state of affairs, and this explains why many persons here would not grieve if the Orchid fever should subside a little.

New and rare plants are generally sent in large numbers to this society's show, because exhibitors believe their plants stand a better chance of receiving certificates than at the Royal Horticultural Society, where the judges are more numerous and more critical. New Orchids were very plentiful, no fewer than nine winning certificates, and out of these I select a few of the best. An extremely pretty new Phalænopsis named *Kimballiana* (after one of your orchidists) was shown by Messrs. Sander, St. Albans. To describe it one must compare it with *P. Sumatrana*. It has flowers about one and one-half inches across, yellow sepals, and petals heavily marked with irregular, transverse bands of coffee brown, while the narrow, woolly-surfaced labellum is stained with purple. This is an exquisite little Orchid and was well worthy of the award.

A variety of *P. speciosa* named Imperatrix won many admirers, as it was so beautifully colored, the whole flowers being uniformly tinted with crimson carmine. The spike was unusually long, and branched, and carried numerous flowers about one and one-half inches across. This is quite a gem in Phalænopsis.

Some superb Cattleys were shown by Low, of Clapton, chiefly varieties of *C. Mossiæ* and *C. Mendelii*. The deepest and most richly colored form of *C. Mossiæ* I ever saw was named Claptoniensis. The flowers were above the average size, petals and sepals intensely deep rose-purple, lip almost a crimson, without veins or spots, and no trace of yellow or white whatever. A form of *C. Mendelii* called Firthii is a decided "break" in this species, as the broad, white petals have a conspicuous blotch of purple crimson (much after the same style as Backhouse's *C. Trianae*), while the lip is very large, broad and superbly colored. Another form of *C. Mossiæ* named Gigantea was certificated, its chief merit being its large size, but a variety of *C. Mendelii* named H. Little struck me by the splendor

of its colors, which are too subtle to describe. The beautiful new *Cypripedium bellatulum* was shown by no fewer than four different nurserymen and all obtained a certificate for it. Sander's *Odontoglossum cordatum splendens* is remarkable for the intensity and richness of its flower colors, and connoisseurs might think a great deal of one he showed called *O. Coradinei hemileucum*.

A large crop of new tuberous Begonias from Messrs. Laing of Forest Hill and Messrs. Cannell of Swanley were certificated, and all were very beautiful, as were the Pyrethrums and Pæonies of the Messrs. Kelway. These Begonias are still popular here, and though one would think that the public had been surfeited long ago with "novelties," among them new sorts are as eagerly sought after now as they were ten years ago. Pyrethrums are also very popular, being such fine border flowers, brilliant and varied in color, and so valuable for cutting, as they last such a long time in water. Moreover, the plants have such a long flowering time and by a little management a rich autumn crop of bloom may be obtained. Messrs. Laing, who make a great specialty of Caladiums, showed several new sorts which the judges thought quite distinct and good enough for certificate. What to me was most interesting at this show was a large gathering of new or uncommon shrubs from Messrs. Veitch. They had a host of specimens, chiefly cut branches of things that had not been shown before. Among them was the cut-leaved form of the scarlet berried Elder (*Sambucus racemosa* var. *serratifolia*), which was as elegant as many stove plants. I have watched its behavior in one or two places, both last year and this, and it seems a very hardy and vigorous shrub. *Elæagnus pungens maculatus* has leaves of a bright yellow, broad margined with green of various shades. *E. macrophyllus*, a new species from Japan, is a handsome shrub with broad, ovate leaves, about four inches long, bright green above and quite silvery beneath. One can imagine its beauty in the shrubbery when every breath of wind turns up its leaves and makes the whole bush look like silver. I shall keep this novelty in view, as it will be invaluable in landscape gardening.

Senecio elæagnifolia is a distinct evergreen from New Zealand, with ovate leaves of leathery texture, deep green, with a whitish tomentum beneath. It is well named, as it looks more like an *Elæagnus* than a Groundsel. It is presumably quite hardy at Coombe Wood, near London. *Aralia Maximowiczii* is a beautiful shrub that has proved quite hardy at Coombe, and I hope it will be so in all parts of England, as it is so distinct from other open-air shrubs, having quite a sub-tropical aspect. It is of tall growth, has deeply palmate leaves (five to seven lobed), dark green, with reddish brown leaf stalks. It is a stately plant, yet more graceful than the common *Aralia Sieboldi* (*Fatsia Japonica*), which is perfectly hardy about London and south of it. *A. Maximowiczii* is, I believe, a native of Japan, and is the *Acanthopanax ricinifolium* of Decaisne. The Japanese Maples, chiefly forms of *A. polymorphum*, with feathery foliage, were shown in large specimens by Veitch, and the rich hues of the coppery-tinged forms had a charming effect. Golden-leaved shrubs, such as *Neillia* (*Spiræa*) *opulifolia aurea*, *Diervilla aurea*, *Jasminum vulgare aureum*, together with cut-leaved sorts like *Alnus incana imperialis*, *Rhus glabra laciniata*, gave the group a bright effect, and showed how attractive a tasteful arrangement of hardy tree and shrub branches can be made. Perhaps the most valuable contribution in the way of new hardy trees at the show was a golden form of *Thuyopsis borealis* (*Chamæcyparis Nutkaensis*), exhibited by Messrs. Slocock, nurserymen at Woking, Surrey. The young shoots were of a rich golden hue, and one can imagine what a graceful tree a large specimen would be on a lawn. The original form of this tree is so valuable in ornamental planting that this golden form is most welcome, although, as a rule, I have no particular leaning towards golden or silver forms of Conifers.

June 21st.

W. Goldring.

New or Little Known Plants.

Phlox Stellaria.*

THE peculiar little Phlox which is figured in the present number is one of the rarest eastern species. It was first discovered by Dr. Short, of Louisville, Ky., in 1829, upon the precipitous limestone cliffs of the Kentucky River, though the exact locality is unknown. It has since been found at Fountain Bluff on the Mississippi, in Jackson County, Illinois, and by Dr. Gattinger, of Nashville, in the Cedar-barrens of Tennessee, in Rutherford and Crawford Counties, growing among sphagnum.

It is a low, slender, spreading perennial, perfectly glabrous, with narrowly linear leaves and rather large scattered flowers. The lobes of the pale blue or nearly white corollas are distinctly bifid. The specific name has reference to this resemblance in flowers and foliage to some species of *Stellaria*. It blooms in May or early in June.

Another very similar species, *P. bifida*, is found on the prairies of Illinois and Missouri. It is distinguished by a minute pubescence, and by the deeper division of the lobes of the corolla into two or three oblong or nearly linear diverging segments.

S. W.

A New Station for *Lilium Grayi*.

CLOSE upon Dr. Watson's recent prophecy in GARDEN AND FOREST, that the habitat of this Lily would prove to be not restricted to Roan Mountain and the Peaks of Otter, has followed its discovery by Mr. H. P. Kelsey in an old field on the banks of Linville River, not far from the little village of that name at the foot of Grandfather Mountain, N. C. The station must be very different from the two subalpine ones previously known. He sends half a dozen plants, collected July 1st, which are readily identified with those that grow under the Alders and Rhododendrons of the Roan Mountain, "Bald," and with Mr. Faxon's excellent figure in GARDEN AND FOREST.

Baltimore, Md.

John Donnell Smith.

Cultural Department.

Vineyard Notes from Southern New Jersey.

THE prospect for a Grape crop here is, at this date (July 9th), reasonably hopeful in those localities unvisited by the rosebug when the vines were in bloom. Where the rosebug came in force there is nothing left to be harmed by rot or mildew—the vines are fruitless.

The rosebug first appeared, formidably, on my farm on May 22d, 1887. For fifteen years I had seen little of these insects, but had heard of vineyards infested to the entire destruction of the Grape crop for the past ten years. In 1887 the rosebugs seemed to swarm from these old homes, and invaded the Vineland tract, consisting of about 34,000 acres. Some farms escaped, but it is proper to call the invasion general, and it was literally an invasion. The insects do not appear simultaneously everywhere, but they spread from the nidus where the broods are hatched. Thus, in 1887 they first appeared on the west side of my farm, and there swept over 3,500 vines, not leaving a single blossom to form a Grape. They seemed moving from the west, and did not reach a vineyard of 6,000 vines on the east side of the farm until about the time of the limit of their existence. Hence these vines escaped their devastation. Nevertheless, the farm east of mine was infested with rosebugs, and they seemed to increase in destructive effect; towards the east, on this farm, also. Probably this was another swarm. The general tendency of movement of these insects seems to be towards the east.

Of course I tried to repel this onset; applied all sorts of insecticides, but really made no effective defense. The bugs had their way. For several days four men constantly labored to save the clusters on those 3,500 vines, but not one was left to pick in September!

* P. STELLARIA, Gray, Proc. Am. Acad., viii. 252, and Syn. Flora, ii. 131. Perennial, glabrous; stems slender, tufted, or creeping at base, low and branching; leaves linear, one or two inches long, rather rigid, slightly ciliate at base; flowers scattered on rather long peduncles, pale blue; corolla-lobes narrowly cuneate, bifid at the apex; ovules solitary.

This spring (1888) I arranged beforehand to meet the invasion. Commissioned by the United States Department of Agriculture as "Special Agent in the section of Vegetable Pathology, to make experiments in the treatment of the fungus diseases of the Grapevine," and "to report on the same," I had in the conduct of these experiments made the accidental observation that certain preparations of copper-sulphate seemed distasteful to the rosebug, which abandoned vines to which this poison had been applied. With the hope that I might have discovered a remedy, I compounded, early in May, the various formulas of copper-sulphate designed as preventives of vine diseases; applied them to the Experiment Vineyard, and also May 29th, so far as opportunity permitted, to other of my vines which had been devastated by rosebugs in 1887. June 5th, 1888, the rosebugs came again; where they were worst the previous year, they most abounded this year.

Those vines sprayed with the copper solutions May 29th were the least infested. Whether this protection was due to the presence of the copper-sulphate on the leaves and clusters, or whether the absence of the bugs from these poisoned vines was merely accidental, I cannot say. However, on a patch of Concord (1,500 vines), about 100 yards distant from those which were sprayed with the copper, the rosebugs took the entire crop! I lacked the time to take care of this vineyard. The vines were simply pruned and fastened to the stakes. The ground was not even plowed. When the rosebugs had full possession here (about 500 bugs to the vine), I experimented with insecticides. I sprayed two rows with a solution of London purple, two rows with a solution of Paris green, both strong enough to badly burn the foliage. A row was dusted with a "bug powder," which has been advertised, and another row with another powder. The remaining rows of the vineyard were sprayed with the various copper-sulphate solutions which I had previously employed on other vines. In addition to these treatments I exhausted my knowledge of chemistry and the toxicological pharmacopœia in attempts to combat the insect. No benefit came from anything tried. When the rosebugs were done not a grape was left! Last week I had the vines grubbed out.

The vines which I have saved (and they are several thousand, now loaded with fruit, and which were infested with rosebugs) are trained on a single wire trellis.

Anticipating the advent of the enemy, and for fungus disinfection, I had the ground beneath this trellis scraped smooth with hoes. When the bugs pervaded these vineyards I sent men, armed with broad wooden paddles made of half a barrel stave, along the rows. A sharp tap of the paddle on the underside of the wire would cause the bugs to fall to the smooth surface of the ground beneath; another sharp stroke of the paddle disposed of them finally. In this manner we daily went over some 10,000 vines for two weeks, and killed rosebugs by the bushel, and in this way I consider I have saved the crop I have. This bug-killing can only be effective in the early part of the day, say up to 9 A. M. Disturbed suddenly in these early hours they will fall to earth and lie still; later in the day they will take wing.

From one small Grapevine, badly infested, I took pains to catch in a basin of kerosene (which kills the insect) and to count the number of rosebugs. There were 1,627! Next day I inspected this vine again, and rosebugs were as plenty on it

as at first! I have a white Rose for which these bugs have a fondness. When this bush bloomed the rosebugs deserted the neighboring Grapevines for it. I have counted 100 bugs on a single flower, clustering over it so as to hide it. I made this bush a 'martyr to science,' and drenched and sprayed it with all known insecticides, including the bichloride of mercury. I powdered it with all the powders, from white hellebore to carbolated lime. Riley's Kerosene Emulsion caused the bugs to fly away promptly, but they were back again in an hour, and in spite of all my applications they devoured every rose on the bush.

I conclude that the only practical way of getting rid of them (and this at times will be impracticable) is to crush them.

There is a comfort, however, to be drawn from a visit of rosebugs to the vineyard—its proprietor is relieved of all anxiety concerning the black rot.

As for me, I have got past Scylla, and am now worried about Charybdis. I have forty or fifty tons of Grapes yet, and the black rot has appeared! Concerning this, what we have done to prevent it, and what we purpose to accomplish, I will leave for another letter. We have modified practice in prevention of rot and mildew this season, but it is yet too soon to speak otherwise than hopefully of the patient.

Vineland, N. J. *Alex. W. Pearson.*

The Fruit Garden.

THE setting of new Strawberry beds is now in order. With good plants from one's own grounds, a favorable season, and proper care henceforward a good crop may be reasonably counted on next year. Sink two or three-inch flower pots in the ground till the rims are even with the surface, upon each one place a "joint" from a runner and hold it down with a stone. When well rooted sever it from the parent plant and turn it out of the pot into the place intended for it.

Potted plants from one's own ground are worth double those purchased from a distance, many of which are not allowed to get sufficiently rooted before they are sent out. In such cases good "layer plants"—as plants rooted naturally are termed—are far better.

Beds of three rows, fifteen to eighteen inches apart and the plants the same distance in row, make a very convenient bed for a small garden where the culture is by hand entirely. It is not a bad practice to mow off the tops of old beds, especially if they have

been troubled with the rust or blight of any kind, and when dry burn them where they fall. If evenly spread over the bed the fire will not injure the crowns of the plants, and will destroy the fungus and perhaps some insects at the same time. In a few weeks the new growth will present a vigorous, healthy appearance, and the plants obtain a rest that seems beneficial.

Raspberry and Blackberry canes should have been beheaded when two or three feet high so as to make them stocky and branch low. The ends of the branches themselves should be pinched off once when they are four to six inches long. This doubles the bearing capacity of the plant near the trunk, enabling it to bear its burden with greater ease than if left to grow unchecked.

It is not always safe to pinch these branches more than once, for fear the after growth will not mature sufficiently to pass the winter without injury. It should all be done this month, and is unsafe if delayed later.

Grape vines should be watched for insect depredators and



Fig. 42.—Phlox Stellaria.—See page 256.

black rot, and all affected berries should be picked off and buried or burned. If dropped on the ground the spores of the *Phoma* mature and are on hand to renew the attack next season. Bagging Grapes is growing in favor among amateurs, but it should have been done last month to insure safety. It would not now save berries from rotting if the infecting germs are already present, but it will protect against the depredations of birds.

E. Williams.

Montclair, N. J.

The Vegetable Garden.

IN marking off the rows for Cauliflower, Brussels Sprouts, and the like, draw drills as if for sowing Peas and plant in these. The drills are useful in holding water and after a hoeing or two are leveled up. In setting out these plants, Lettuces or other crops, do so in dull weather or in the afternoon in sunny weather, and after planting give a good soaking of water. In planting Leeks, dibble them in moderately deep and also in furrows. By planting them in furrows and drawing the earth up to them as they advance in growth, the long white necks so desirable in this vegetable are secured. Tomatoes are now in vigorous growth. Thin their branches and shorten their laterals a little to give the fruit the benefit of a free circulation of fresh air, and thus, in considerable measure, prevent rotting, but do not expose the fruit to sunshine, else they may get scalded. Perfection, Acme, and selected Trophy for summer, and Winter's Early Essex for forcing in winter, are capital sorts, but there seems to be a good deal of confusion in the names of Tomatoes, and, indeed, the Tomatoes intermix so much as often to lose their varietal identity. As soon as early Potatoes become ripe, which is indicated by the stems dying off, lift them and use the ground for some other crop, as Celery, Cauliflower, Carrots or Strawberries. Should early Potatoes remain in the ground after they are ripe, a soaking rain succeeding dry weather will start a second growth, and thus render the tubers of inferior quality; on the other hand, in storing these early Potatoes, great care must be used; a cool, airy, moderately dark place is necessary, and the tubers should be stored only in small bulk. It is not advisable to raise any more of a very early Potato crop than can be disposed of before September.

In order to maintain vegetable crops in their most vigorous condition, the ground must be kept clean and well stirred about them, whether it be dry or moist, only do not stir the ground in wet weather. In many large gardens the plow is used; in most private gardens the hoe is used. In summer cultivation, plow shallow or hoe deep is good advice, for it takes very deep hoeing to be as deep as shallow plowing; and in summer weather, when the ground is dry and hard, deep hoeing, although hard work, is very necessary. In clean ground, raking is as good as hoeing and much quicker work. The long, steel-toothed, bow-rakes are most excellent tools for this work; they tear through the surface soil in fine style and leave it loose and mellow; they also root out and expose to the killing influence of warm sunshine all young weeds that may be germinating. Where the rows are narrow and the ground hard, and it is necessary to break it deep, the Hexamer or prong-hoe is an excellent implement.

W. F.

Glen Cove.

The Fritillaria.

WHEN taking a few notes amongst the bulb gardens in Haarlem and its vicinity, I visited, amongst others, the celebrated hardy plant nursery of Messrs. Krelage & Sons, in Haarlem. At that time—end of April—the leading feature in the nursery, besides the ordinary Hyacinths, Tulips, etc., were the Narcissus and Fritillarias. The last-named have been cultivated here for many years, and a very large space of ground is set apart for the varieties of *F. meleagris*. It is an old English garden plant, and one that was much esteemed when exotic plants were scarcely heard of. There is some variety of coloring found amongst them, from pure white, or white with a greenish tinge, to the usually maroon-purple checkered varieties. Probably the numerous forms in the possession of Messrs. Krelage have been produced by crossing other species with it. The deep yellow ground on some might claim the parentage of *F. Moggridgei*, and others that of *F. Pyrenaica*, but it may not be beyond the art of the hybridist to produce the whole of them from the common species—*F. meleagris*. Some varieties are very tall and vigorous, others are dwarf and not at all free in growth; but, like delicate children in some families, they may be even more valued on that account.

There might be good stocks of some half hundred varieties,

and I went carefully over them, noting the most distinct in growth and flowers. The colors range from pale yellow with scarcely any markings upon them to rich chocolate heavily checkered. Theresa Schwartze is a pale form, marked with brown on yellow ground; Paul Kruger is glossy chocolate, heavily checkered; Arentine Ardensen, greenish-yellow, checkered reddish-brown; Mr. Dullert, crimson-brown, heavily checkered; Siege of Haarlem, greenish-yellow, slightly checkered a reddish-brown color; David Blès, yellow, faintly checkered red—a dwarf-growing variety; Stieltjes, heavily checkered maroon and yellow—a vigorous plant; Van Lerijs, medium, blood-red checker, vigorous in growth; Alma Tadema, pale greenish-yellow, with rosy-red and medium-sized checker; Rembrandt, maroon-crimson heavily checkered; E. H. Krelage, heavily checkered chocolate-red on yellow—an excellent plant; W. J. Holdwijk, rich maroon-crimson, heavily checkered. The above are a dozen of the best varieties which I noted in the collection. Some two years ago this firm sent a selection of them to be inspected by the Floral Committee of the Royal Horticultural Society, and these were greatly admired at the time by some members of the committee, and selections from them were awarded certificates, but cut flowers that had made a long journey, and were crumpled and faded, gave a poor idea of the beauty of the flower, and the effect produced when seen in masses of varied colors.

Fritillarias are grown without much trouble, their place being in the herbaceous border, where they should be planted in groups, and allowed to remain undisturbed for several years. A deep, sandy loam, moderately moist, is better for them than a light, shallow, or gravelly soil.

I have grown several distinct species in pots, also the white and ordinary forms of *F. meleagris*, with success, the flowers being greatly admired, coming as they do before any are in flower outside. Repotting should be done annually, but the bulbs themselves should not be disturbed until in the course of time they become too numerous, and therefore crowded.

—J. Douglas in *Gardeners' Chronicle*.

Cut Flowers in Midsummer.

ALTHOUGH out-door gardens may in midsummer be bright and gay and pretty enough, cut flowers for indoor decoration are also needed in abundance. We cannot gather blossoms from Coleus or Alternanthera and House-Leek beds, for these plants in pattern beds are not allowed to bloom; and we should not gather the flowers from the Geranium or Heliotrope beds, because the more blossoms these plants carry in the beds, the better do they serve the purpose for which they have been planted. But in mixed borders or reserve gardens should be grown an ample quantity of such plants as yield a generous supply of flowers that are desirable and well adapted for cutting. While at all times during the summer we may have many sorts of flowers, there are always a few sorts in their season that are in more demand than others, hence should be grown in larger quantity. This is often a matter of taste; different persons have different preferences. Just now the main crop of cut flowers consists of Sweet Peas, Mignonette, Heliotrope, double white Feverfew, Hollyhocks, small-flowered Sunflowers, Drummond Phlox, scarlet Pelargoniums, Rose Geraniums, annual and perennial Coreopsis, Nasturtiums, Candytuft, Ehemans' Canna, and the narrow-leaved, yellow Day Lily (*Hemerocallis graminifolia*). These may be supplemented by a great variety of other flowers—for instance, Zinnias, French and African Marigolds, Ten-week Stocks, Indian Pinks, Garden Pentstemons, Verbenas, Poppies, Larkspur, Bellflowers, Veronicas, Cosmos, Butterfly Weed (*Asclepias tuberosa*) and many Lilies, as *L. auratum*, *L. longiflorum* and *L. Humboldtii*. *Euphorbia corollata* and *Gypsophila paniculata* are now in their prime and very useful for adding a light and airy effect to other cut flowers. Although Dahlias are regarded more as autumn than summer flowers, they may now be had in tolerable abundance. The earliest planted Gladioluses are in bloom. *Montbrietia crocosmiflora* has beautiful, orange-colored flowers and should be grown in quantity for summer flowers. It is tender, but wintered in a warm frame or cool green-house, and divided and planted out-of-doors in summer, it grows and blossoms very freely. Unlike most other bulbous plants used for summer gardening, it should be kept growing all winter. In the same way the finer Cannas should be kept growing somewhat in winter, if we want a large increase of stock.

In order to maintain the crop of flowers in their best condi-

tion, keep the ground scrupulously clean from weeds and the earth well loosened about the plants. Remove decaying leaves and flowers, support very neatly, with string and stakes, all plants requiring the same, prevent overcrowding, and as soon as perennials have done blooming cut them over, so as to give the other occupants of the borders more room. As soon as Drummond Phlox, Mignonette, Stocks, or other annuals are past their best and begin to appear seedy, remove them, fork over the ground, and at once replant with Marigolds, scarlet Salvia, Zinnias, Drummond Phlox, or China Asters previously prepared for this purpose; or sow some Mignonette, Sweet Alyssum, or other annuals that will have plenty of time yet to grow and bear a good crop of flowers before frost may destroy them.

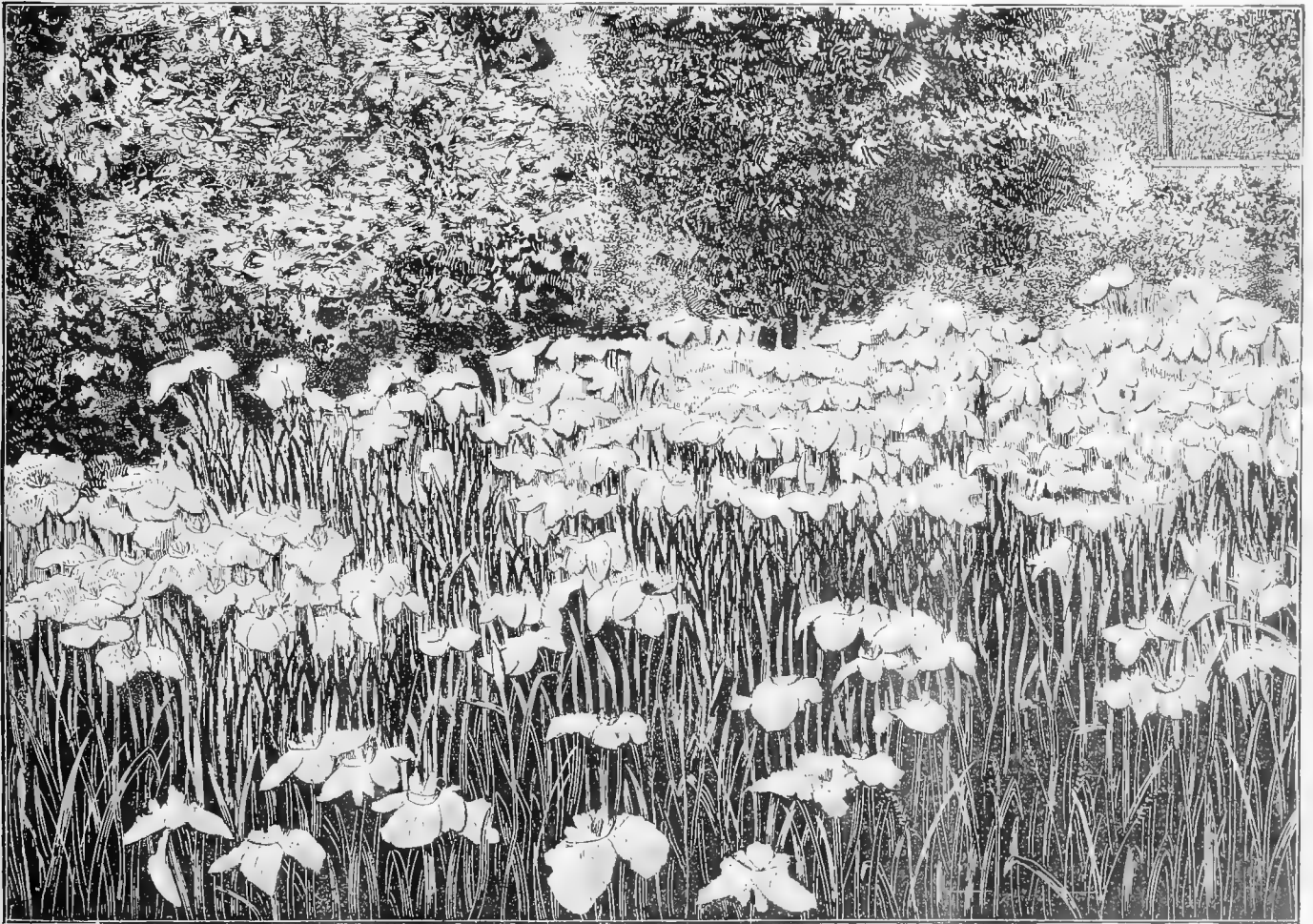
Many people have a passion for saving seed. This is well enough and our own saved seeds are just as good as those we buy, but the question is, Is it worth while? Plants bearing seed occupy room that might be used by plants coming into

Phlox Stellaria, of which a figure is published on another page of this issue, is an excellent rock-garden plant, making handsome carpets of pleasant green, which, in the latitude of Boston, where this plant is perfectly hardy, are covered late in May with flowers quite unlike in color those of any other Phlox in cultivation. It spreads much less rapidly than the Moss Pink (*Phlox subulata*), but its habit is very similar, and it is propagated in the same way by cuttings or by division. C.

Plant Notes.

Japanese Iris.

ONE of the most attractive features in Mr. John L. Gardner's beautiful garden in Brookline, Massachusetts, is the bed of Japanese Iris (*Iris laevigata* or *Kempferi*), which forms the subject of our illustration.



A Bed of Japanese Iris.

flower, and seeds of common flowers cost very little. Of course, it is well to save seed in the case of extra choice or rare varieties, or of sorts not easily obtained, or of expensive kinds that we can save with little trouble. Another point in seed-saving is this: In private gardens the choice blossoms are used as cut flowers, and whatever are left to go to seed are the lateral, second-rate, or poor flowers, which give inferior seed; seed-growers, on the other hand, assiduously preserve the best flowers for seed, cut off and throw away the poor flowers, and root out and destroy all plants bearing poor varieties of flowers.

Watering plants in dry weather requires attention. It may be impracticable to water all the plants in the garden, but we should give, and that liberally, to Dahlias, Asters, and such others as suffer much from drought. Never water plants while the surface of the ground is hot or the sun is shining brightly on them; and in giving water, give enough to penetrate deep into the earth.

William Falconer.

The plants, which were selected in Japan with great care by Mrs. Gardner, represent the best named Japanese varieties. They are arranged according to color, in the Japanese fashion; each row across the bed consisting of one variety, those with white flowers at one end, and then all the intermediate shades to the dark blues and purples at the other end. The bed is sunk eight or ten inches below the surface of the surrounding lawn, and is furnished on one side with a perforated water-pipe so that the plants can be irrigated during the growing season. It is eighteen inches deep and consists of a rich compost of loam and thoroughly rotten cow-manure, and every year it gets a good top dressing of manure. Every pleasant morning after the middle of May the water is turned on at nine o'clock and allowed to run till three or four o'clock in the afternoon; by that time the

bed is thoroughly saturated and covered to a depth of two or three inches with water; the supply is then shut off until the next morning. Some of the varieties, under this generous treatment, grow to a height of five or six feet, and have produced flowers fully ten inches across, and surprising in their profusion and beauty. While irrigation is doubtless necessary to develop the greatest perfection of the Japanese Iris, it can be successfully grown in this country in ordinary seasons in any good garden soil and without artificial watering. Very fine flowers have been produced without special treatment by Mr. Parkman and other American growers, who have raised good seedling varieties of this plant without giving to it more care than is required by other Irises. The Japanese Iris is one of the handsomest of the whole genus, and, when in flower, one of the handsomest of hardy perennial plants. It is beloved by the Japanese, who make holidays to visit the Iris beds when the plants are blooming, and who have devoted infinite pains to its improvement. The flowers are hardly surpassed in delicacy of texture or in beauty of color, but they do not appear here until July, and the hot sun soon fades them. The blooming season may be prolonged by the use of an awning placed over the beds during the day, but it cannot be denied that this plant flowers too late here, and that its period of beauty is too short in this climate ever to make it a great popular favorite. It is hard to imagine, however, anything more beautiful than a mass of these many tinted flowers like that which our illustration represents, and which certainly has no equal in the United States, either in the varieties which it contains or in the perfection with which they are cultivated.

Notes from the Arnold Arboretum.

THE European Privet (*Ligustrum vulgare*) is in bloom. This is such an old-fashioned shrub, and such a common one, having long remained the favorite hedge plant in the Northern States before Conifers were as much planted for hedges as they are now, that few people realize, perhaps, what a valuable plant it is or how numerous are its claims upon the attention of the planter. There is not a shrub more hardy, or one less fastidious in regard to soil; it blooms profusely at a season of the year when comparatively few shrubs are in flower; it is little affected by drought, and therefore invaluable for planting under or near large trees, which quickly exhaust the moisture in the soil, and so make it difficult for other plants to thrive near them; and in autumn it is covered profusely with handsome black berries, which remain bright and unwithered upon the branches until the new leaves appear the following spring. The Privet, like the Barberry, has gradually become naturalized in some parts of the Eastern States, through the agency of birds, no doubt, and seems to adapt itself now to its surroundings as completely as any American plant; and, like the Barberry, it can be planted in connection with our native shrubs without raising any question of want of fitness or naturalness of grouping or composition. Several varieties are cultivated. There is one with yellow fruit, which has now become naturalized in the neighborhood of Boston. There is one with pendulous branches, which, when grafted standard high, makes an excellent small weeping tree; and there are forms with erect growing branches, giving to the plant a fastigate habit, and with golden, blotched leaves.

Ligustrum Ibota is a Japanese and north China Privet, and a valuable, hardy shrub, of graceful habit, just now covered with flowers. It has erect, softly pubescent branches, ovate-elliptical, obtuse leaves, and a slender thyrsus of small white flowers, with a long and slender corolla tube. It is a variable species; at least there are two forms here of what is evidently the same species, one with leaves two inches long on short petioles, and a slender, erect inflorescence three inches or more long. In some collections this is known as *Ligustrum Amurense*, under which name it is very well figured and described by Carrière in the *Revue Horticole* for 1861, p. 352. The other variety has leaves rarely an inch and a half long, more oval in outline and with shorter petioles, while the inflorescence is less than an inch long, few-flowered, and often one-sided and nodding by the curving downwards of the peduncle.

Ligustrum ovalifolium is another Japanese species belonging with the last to the section of the genus with long-tubed flowers. It has been of late years very widely distributed in American gardens under the name of *L. Californicum*, or the California Privet, a name which it perhaps owes to the possible fact that it reached eastern nurseries first from California, where it has been very generally cultivated for several years. It is a hardy and free-growing shrub, with erect branches, five or six feet high, covered with handsome oval or ovate-elliptical, bright green, shining leaves, which do not fall until late in the winter. The small white flowers are produced in abundance. Like all the Privets, it is easily propagated from cuttings—so easily that it has become a great favorite with nurserymen; and certainly no other shrub of such comparatively recent introduction has been so widely and generally cultivated in this country.

Not the least attractive adornment of many old-fashioned New England door-yards is *Spiraea sorbifolia*. Unfortunately, it is rarely seen nowadays anywhere else in this country, for it is a noble plant, forming, with generous treatment, a great mass of dark green foliage, six or eight feet high by as much through, and now covered with immense panicles, fully two feet long, of small white flowers. The leaves are pinnate, with reddish stems, fifteen to eighteen inches long, and composed of about ten pairs of acuminate, sharply serrate leaflets, with prominent veins. The flower clusters are produced on the ends of vigorous branches of the year, which often attain a length of three feet before the flowers appear, and are quite red. It is a common and widely distributed Siberian species, reaching Japan, and the earliest to flower here of the plants of the small section *Sorbaria*, which some botanists now separate from *Spiraea* as a genus. They all have pinnate leaves and large terminal panicles of white flowers. They are Asiatic, generally Siberian, with one species confined to the Himalaya and one in Mongolia or northern China. *S. Lindleyana*, the Himalayan species, a handsome plant in English gardens, where it sometimes attains almost the size, and the habit of a tree, is not hardy here, being cut down to the ground every winter, and never flowering.

Spiraea Japonica, as defined by Maximowicz and made to include *S. callosa* and *S. Fortunei*, is an exceedingly variable species, widely distributed from Japan (where it was first made known) to northern China and the Himalayas. It contains forms (especially those referred to *S. Fortunei*) of very considerable garden value, and among those in the collection here some are in flower from the end of June until frost. One now in flower and the earliest is of Japanese origin and seems identical with the plant figured by Hooker in the *Botanical Magazine* (t. 5164) as *S. Fortunei*. It is a spreading, flat-topped shrub, four or five feet high, with reddish glabrous branches, the young shoots puberulous, dark green leaves, paler on the under side, five or six inches long, elliptical-lanceolate, with a long acumen, and glandular serratures. The flowers are rosy purple, arranged in a lax, flat cyme with slender spreading branches and more than a foot across. The disk, as is the case with the flowers of all the forms of this species, is provided with a row of small, sub-erect red glands. It is a hardy, free growing plant not particular about soil; and one of the best of the forms of *S. Japonica*.

The opinion is frequently expressed that the European Heaths are not hardy in this country, or that they are difficult to manage. There is a large collection of these plants in the Arboretum, where they grow well and flower freely every year. They are planted in an exposed, sunny position, and in soil with which a considerable amount of peat has been mixed, and they receive in winter a covering of Pine branches. Young plants—and this is true of many garden shrubs—flower better than old ones, and it is found advisable to renew the collection occasionally with new plants. The earliest of the summer-blooming species in flower is *Erica Tetralix*. It is a dwarf plant of grayish hue, six or eight inches high, with minute, ciliated leaves arranged in fours and pale red flowers in terminal heads. It remains in bloom nearly all summer. The hardy heaths are all capital rock-garden plants and they make good edgings for beds of larger evergreens.

The Silky Cornel (*Cornus sericea*) is one of the latest of the North American Dogwoods in the collection to flower. The remarks which have been made in earlier issues of these notes regarding the value of our larger growing native shrubs for planting in public grounds, are as applicable to this plant as to the other Dogwoods and to the Viburnums. Like *C. stolonifera*, it is handsome in winter with its purple branches. It has ovate pointed leaves, silky downy on the under side, close, flat, rather small cymes of yellow-white flowers and pale blue fruit. It is very common at the north along the borders of

swamps and in other low, wet places, where it forms a wide spreading bush eight or ten feet high.

Rubus odoratus, the Flowering Raspberry, is another useful native shrub. It has upright stems four to five feet high, covered with bristly, glandular hairs, three to five lobed leaves, and handsome, dark rose-purple, clustered flowers, more than an inch across when expanded. It is a common northern plant, spreading rapidly here in cultivation by underground shoots, and soon forming almost impenetrable masses of dense stems and foliage, now gay with bright colored flowers. It thrives, too, under trees, and is one of the best plants to cover shaded ground rapidly in situations where such a tall growing plant can be properly used.

Rubus Nutkanus, which resembles the common Flowering Raspberry in foliage and in general habit, but with white flowers is not hardy here, and is killed down to the ground every year, and therefore does not flower. It is found from the shores of Lake Superior and westward to Puget Sound and British Columbia.

Itea Virginica is now in flower. It is a dwarf shrub, rarely more than a couple of feet in height. The simple, upright, terminal racemes are not very showy, but it is an interesting plant as the representative of a peculiar tribe of the Saxifrage Family, and it flowers when shrub flowers are less abundant than they were a month ago. It grows in low, wet places from New Jersey southward near the coast.

The three species of *Ilex* belonging to the section *Prinos* which are found in the Northern States are now all in flower. Their chief ornamental value no doubt consists in their showy fruit, but they are not without attraction in flower, especially *I. laevigata*, which is much the rarest species, and which may be distinguished from the common Black Alder (*I. verticillata*) by the long stalked sterile flowers, and by its larger fruit, which ripens somewhat earlier in the autumn. They are both easily cultivated, and worth much more attention at the hands of gardeners than they have ever received for the brilliant and abundant fruit which covers their branches in winter. The Ink Berry, *Ilex glabra*, is a handsome evergreen shrub, with black berries. It occupies considerable tracts of sandy soil near the coast from Massachusetts southward, notably on Cape Cod and on Long Island, and it is often found along the borders of ponds and streams in the Pine woods, where it grows much taller (four or five feet sometimes) than on the exposed sea coast. This is one of the few broad-leaved evergreens of the Northern States; it assumes a compact habit in cultivation; its foliage and its fruit are both handsome; yet although it was introduced into England one hundred and thirty years ago, and has always been grown in foreign nurseries, it is practically unknown in American gardens, and its value seems to have been never appreciated by planters in this country.

Andromeda ligustrina is not a showy flowered species, but it can be used, perhaps, with advantage, to give variety to a plantation of native shrubs, and it will thrive in low, wet ground, where it reaches a height of eight or ten feet and produces at this season of the year an abundance of racemose-panicled, rather small, pure white flowers. The ovate-oblong deciduous leaves turn brilliantly in autumn.

One of the most beautiful of our native Roses now in bloom is *Rosa nitida*. It is rather a rare plant, found from Newfoundland to eastern Massachusetts, and although distinguished and described long ago and even introduced into Europe early in the century, it has been but little known in this country, and has, until quite recently, been confounded with other species. It is one of the most distinct, nevertheless, of the American Roses, and may be known always by the red shoots, thickly beset with slender red spines, barely stouter than the red prickles. The leaves are bright green and shining, and make a charming contrast with the bright, rose-colored or red flowers, one and a half to two and a half inches across. *Rosa nitida* inhabits damp swamps and other low, wet places, but transferred to the garden, like most of our native Roses, it grows freely, soon making a broad mass of foliage and flowering with the greatest profusion. There are few shrubs better worth a place in the garden.

Alyssum gemonense is a dwarf under-shrub, a native of southern Europe, and quite hardy here. It grows a few inches high, and the base of the stems only are woody. They are covered with small, lanceolate, entire leaves, clothed with grayish, stellate down, which gives them a velvety appearance. The yellow flowers are produced in close, terminal cymes, which quite cover the plants giving to a mass of them a showy appearance, which they retain during several weeks. This is an excellent dwarf rock-garden plant.

July 3d.

7.

The Forest.

The Long-leaved Pine.

THIS widely distributed tree (*Pinus palustris*) forms almost exclusively the immense forests of the lower Southern Pine Belt, which with scarcely any interruption cover tens of thousands of square miles. It furnishes not only enormous supplies of valuable timber, but is also the chief source of the resinous products of North American forests. It is therefore first in importance amongst all the trees of the southern division of the Atlantic forest region.

From the northern confines of North Carolina, the forests of Long-leaved Pine extend in a belt, varying from 90 to 120 miles wide along the coast of the Atlantic States, to Florida, crossing the Peninsula to the Everglades, and from western Georgia following the shores of the Gulf of Mexico to the bluffs of the Mississippi River. One vast forest of Long-leaved Pine covers the belt of gravelly and sandy drift soils from 5 to 25 miles in width, which traverses Alabama from its eastern to near its western borders. On detached patches of the same formation such forests reach in that state the 38th degree of north latitude at an elevation of about eight hundred feet above the sea. West of the Mississippi River this belt appears beyond the alluvium of the delta on the drift covered uplands. The magnificent forests of Long-leaved Pine of the western Gulf region stretching from the Pachita river to the valley of the Trinity in Texas and from the thirty-second degree of north latitude to the savannas and marshes of the coast are unsurpassed in the luxuriance of their growth and their timber wealth.

Provided with a powerful taproot, the finely shaped trunk of this tree rises in the fullness of its growth to a height of 100 to 115 feet, with a diameter of 24 to 32 inches near its base, and free from limbs to one-half or two-thirds of its length. The massive, horizontally spreading limbs, rarely exceeding 20 feet in length, divide into short gnarled branches, forming an unsymmetrically shaped head which affords but a scanty shade to the ground beneath. The leaves to the number of three in a sheath of a rich glossy green and from 8 to 12 inches in length, are shed during their second year, and therefore with the increasing shortness of the axis of annual growth are crowded at the extremities of the otherwise naked branches in dense tassels or tufts. The edges of the bracts being fringed with fine, long, silky hairs, provide the densely crowded leaf buds terminating the branches with a soft covering of silvery white, by which this species is readily distinguished at first sight from its nearest allies.

The flowers, situated near the apex of the young shoots of the season, make their appearance early in the spring. The staminate flowers in great abundance and chiefly on the lower branches, discharge their copious pollen here about the middle of March. The pistillate flowers being chiefly confined to the upper part of the tree, are fully exposed to fertilization by the pollen of other individuals. They are in some years much more abundant than in others, and at times almost entirely wanting for a series of years, to the complete failure of the crop. The long, slender, slightly bent cones ripen during the second year, and shed their seeds late in October. These afford a rich mast eagerly devoured by many denizens of the forests. If at this season the weather continues wet and warm, the seeds sprout in the cone and the crop is lost.

After fruitful seasons, which are observed to happen at intervals of 3 to 4 years, seedlings spring up in the openings of the forest wherever the rays of the sun can reach the ground, the seeds sprouting soon after having fallen. In the following season the plantlet produces dense tufts of its secondary or foliage leaves, the stem scarcely rising above the ground. During the succeeding three or four years its growth is very slow, being rather directed to the early development of a powerful root system. At the end of that period the tufts of the leaves of the young Pines scarcely reach above the surrounding herbage. The simple stem having by this time attained a certain thickness, now increases suddenly in height. In the course of the following years irregular branches are thrown out which, somewhat before the tenth year, begin to form regular whorls. Trees ten years old average twelve feet in height. During the next fifteen years growth proceeds at the most rapid rate. At the age of twenty-five years the trees average from forty to forty-five feet in height, with a diameter rarely exceeding ten inches. At a hundred years of age they measure from seventy to eighty feet in height, which during the next half century increases to over ninety feet, with a diameter of sixteen to eighteen inches three feet above their base. From this age to the second century of its life, the Long-

leaved Pine furnishes merchantable timber of the required standard, that is, logs twenty-four feet long and fifteen inches across the smaller end. Trees furnishing square timber in lengths from thirty-five to fifty feet, with a uniform diameter exceeding fifteen inches, show from 250 to 300 rings of annual growth.

Under such conditions of growth and under the continually increasing strain to which they are subjected to meet the demands for their products, the reproduction of these Pine forests is not keeping pace with their depletion. Considering the ever-increasing drafts upon them under wasteful and destructive methods of management, considering devastation caused by the tapping of the trees for their resin, and the damage inflicted by recurring forest fires and by live stock involving the total destruction of the young growth, the prospect of their maintenance seems hopeless and their destruction cannot be long delayed.

Other causes are contributing to the same result and weaken the chances of the Pine for survival in its struggle with competing species during the earlier stages of its life. If the removal of the original growth of Long-leaved Pine happens to be succeeded by a series of barren years, the soil is overgrown by a stunted growth of deciduous trees which completely shade the ground and exclude forever the offspring of the Long-leaved Pine. Towards the northern limits of the Pine belt where the Long-leaved Pine is associated with various deciduous trees, with the Short-leaved and the Loblolly Pine, it invariably succumbs in the struggle to gain a hold on the soil. In the damp flat woods of the coast plain from Georgia to the Mississippi River it is replaced by the Cuban Pine, the Loblolly Pine taking possession of the lands thrown out of cultivation.

According to the returns obtained for the few years at the points of export the products of the Long-leaved Pine in lumber, square timber, and naval stores shipped annually by water and by rail to foreign ports and distant domestic markets, represent fully twenty million dollars. And this sum would be vastly increased if the value of the same products consumed near the centres of production in charcoal, railroad ties and lumber of inferior quality were estimated.

Mobile, June 1st, 1888.

Karl Mohr.

Correspondence.

Prospect Park.

To the Editor of GARDEN AND FOREST :

Sir.—I was delighted to see your recent editorial calling attention to the beauties of Prospect Park and the dangers which threaten them. Too few people in Brooklyn, not to speak of New York, realize what a paradise of beauty lies at their doors. The distance which must be traversed, largely over bad pavements and through rather disagreeable precincts, before a New Yorker is able to reach Prospect Park, is sufficient to explain, perhaps, why a far more beautiful park than the Central Park is so seldom visited by those who throng the drives and walks of the latter. But even the accessibility of such sea-side resorts as Coney Island seems insufficient to account for the indifference of the residents of Brooklyn. I have never visited Prospect Park on Sunday, but I am told that even then it presents a very different appearance from the crowded condition of Central Park, and on a week day its wide roads almost empty of vehicles, its immense lawns trodden but by a few scattered children, and its shady outdoor restaurant occupied by scarcely half a dozen persons, are in strong contrast to the populous gaiety which one sees not only in the park of New York, but in those of Chicago, Philadelphia, and, I fancy, all other great towns but Brooklyn. One cannot help grudging Brooklyn the possession of the finest park in the country, and cannot help fearing that it will suffer at the hands of Commissioners who are so little restrained in their acts by any strong sentiment or interest on the part of the public.

It seems, however, as though the injury thus far worked had been more in the way of acts of omission than of acts of commission. In every part of the park one sees plantations which loudly cry for thinning—which have already suffered much and in the next few years will suffer very much more, from overcrowding. In some places, moreover, the presence of dead or dying Conifers—chiefly Spruces and Pines—conspicuously mars the effect of lovely landscapes. But not nearly so many such trees were planted here as in the Central Park, and, consequently, the total injury to their effect which they work is by no means so grave.

The present Park Commission, however, as your editorial states, has resolved upon a more vigorous course of action than that pursued by its predecessors, and it is time to keep one's eyes open for faults of commission. It has, indeed, been asserted from more than one quarter that they are already conspicuously apparent—that, for example, the bordering plantations of the park have already been so badly treated in some places that a view of the shabby encircling streets is admitted. I doubt whether these charges are just. There are certainly a number of places to be found where the bordering plantations are so thin that they may be said hardly to exist; but in all those I found during two visits made to the park for the especial purpose of examining into this point, their thinness seems to be due not to the cutting out of vigorous trees, but to the gradual decay of the plantations. The Conifers largely chosen for this particular purpose stand to-day as miserable perishing little trees, hideous in themselves and pensive to the eye in every direction. Perhaps much cutting has in truth been done in places such as these, but if so, it is probable that it has been merely in the way of removing even worse specimens than those which remain. No soul alive would be so foolish as to cut down flourishing trees and leave such little forlornities as these. The remedy for the nudity of such spots is not to be found in the careful preservation of their existing growths, so much as in sweeping them away and planting *de novo* with trees better fitted to survive and grow into effectual screens. Of course there may be other spots along the borders of the park where flourishing plantations have been massacred, but I failed to find them.

As regards the abandonment of the original scheme for putting a music-stand on the little island near the terrace, I think your words will be re-echoed by all who know Prospect Park. The effect of music heard upon or across the water is proverbially beautiful, and the promenades and concourses on and near the terrace lie in such a way that I cannot conceive there would be any bad acoustic results. It should be remembered that the music rendered in such a place as this is not, as a rule, need not be, and, in truth, ought not to be, of that serious and subtle sort which demands for its right understanding the acoustic properties of a well-built, enclosed auditorium. It is heard, generally speaking, by a different class of music-lovers from those who pay for admittance to such auditoriums; and, whatever the class, it is listened to in a different spirit. Persons who are eating and drinking or walking, driving or rowing out-of-doors, demand music which is merely a pleasant gay accompaniment to their actions and their conversation—music of a light character, and of a sort which does not demand perfect acoustic conditions any more than it demands close and exclusive attention. Of course even under these circumstances music distresses instead of pleases the ear if it is heard as intermittent puffs of sound broken by lapses of silence or if only its strongest notes are perceived. But except in a strong wind there seems no reason why this effect would be produced by a band playing on the island; in a strong wind it will be produced in any out-door situation where large masses of foliage exist; and that such masses should exist is essential for the comfort and pleasure of those who are to listen. The best place, acoustically, for a music-stand, would be in the centre of the largest open lawn that could be found; but who would care to stand or sit in the sun to enjoy good acoustic properties thus supplied?

New York City.

George Cumming.

To the Editor of GARDEN AND FOREST :

Sir.—I have three Sycamore Maples transplanted three years ago, apparently in a thriving condition except that the bark is falling off—beginning at the ground, the disease creeps up the trunk. Is there any treatment that will save the trees?

Nahant, Mass.

A. P. C.

[The spread of the disease may perhaps be checked by carefully cutting away any decayed matter which may be found where the wood has been exposed by the falling away of the bark and then covering the whole of the exposed portion with a coating of coal-tar which can be obtained from any gas works. A covering of straw wrapped loosely round the trunks to protect them from the hot summer sun will be helpful to these trees. Vigorous growth should be stimulated by cultivating at once the ground about the trees, which should then receive a good, thick top-dressing of old, well-rotted manure, which will not only enrich the ground, but will serve as a mulch and check evaporation; and next winter or in the early spring

the branches should be shortened in one or two feet all over the trees; or if they are already large more of the branches even can be cut away with advantage.—Ed.]

Nymphaea tuberosa in Eastern Waters.

To the Editor of GARDEN AND FOREST:

Sir.—Recently Mr. E. D. Sturtevant, of Bordentown, N. J., the well-known Water Lily expert, called my attention to the fact that the Water Lilies growing near my home were not the familiar *Nymphaea odorata*, but the western form, *N. tuberosa*. I have gathered a number of rhizomes and many flowers, and find that the former all have the rootstocks with compound and single, spontaneously detaching tubers, as given by Gray as characteristic of *N. tuberosa*. The flowers are much less strongly scented; some nearly inodorous and have no pinkish tinge.

Leaves, flowers and rootstock are all, as a rule, if not invariably, smaller than the dimensions given by Gray, and suggest that the plant found here bears the same relation to the true *N. tuberosa* that *N. odorata*, var. *minor*, does to the true *N. odorata*; so it might be called *N. tuberosa*, var. *parva*.

The nearest recorded locality for *N. tuberosa* is Meadville, Penn., fully 300 miles as the crow flies.

The *Nymphaea odorata* grows most luxuriantly about Morrisville, Pa., opposite Trenton, N. J., and in various localities in the neighborhood of the city mentioned. It is a curious fact, therefore, in plant distribution, that this western form should be found here in central New Jersey, and only, I believe, over a very limited area.

Charles C. Abbott.

Trenton, N. J., July 7th, 1888.

To the Editor of GARDEN AND FOREST:

Sir.—In your article on *Prunus pendula*, in No. 17 of GARDEN AND FOREST, you state that the meaning of the Japanese name *Ito sakura* is pendulous. Permit me to say that that is hardly a literal translation of it. The first syllable, *Ito*, means thread, twine, raw silk, and the like, and the word *sakura* is the name of the Cherry tree; hence *Ito sakura* would more accurately be rendered the Thread Cherry Tree—having reference to its long thin branches.

Referring to Dr. Hepburn's Dictionary of the Japanese Language I find the ordinary word for pendulous, having reference to a tree with pendulous branches, is *Shidari*, and is illustrated by the word *Shidari-yanagi*, the name of the Weeping Willow. I may also state that I sent *Prunus pendula* to Messrs. Parsons & Sons as early as 1874 or 1875, with whom it has been flowering for several years' past.

New York, July 7th.

Thos. Hogg.

Periodical Literature.

In the *Fortnightly Review* for June Mr. Oswald Crawford writes in a very charming way of "Summer Time in Rural Portugal." The picture he paints of country life in this beautiful but little known corner of Europe is an attractive one all through, but the most attractive parts of it are those which reveal the peculiarities of its gardening art. "The three summer months," writes Mr. Crawford, "are so hot, and mostly so dry, that gardening in the north of Europe fashion, with turf, and flower-beds put out therein, is possible but not easy. Perhaps it is for this reason that Portuguese gardeners are about the very worst and most ignorant in the civilized world,—knowing almost nothing of potting, and soils, and cuttings, and grafts, and forcing, and the management of 'glass,' . . . yet the gardening traditions of the Portuguese, in spite of their ignorance, are good, and much of their gardening doctrine sound. No Portuguese, either in practice or in theory, would admit, for instance, that monstrous proposition which every English gardener insists upon as a postulate too obvious for argument, namely, that a garden is a place for flowers as a turnip-field is a place for turnips. The Portuguese gardener, to judge by his results here, considers, and I think justly, that flowers are indeed very pretty adjuncts and ornaments in a garden, but of infinitely less importance than the walks, the shade of branching trees, the greenery of leaf and spray, the cooling breezes in summer, the warmth of the sun in winter, and at all seasons the golden fretwork that the sunlight makes upon the ground through overhanging boughs." As almost everything in this part of the world is a survival, Mr. Crawford explains, so are Peninsular gardens survivals of the Moorish ideal of what a garden should be, modified by the requirements of the country and climate. The ideal of the Moor in

the hot and arid lands of his nativity means as much "shade and coolness and moisture" as can be obtained,—thick bowers and vistas of foliage, plashing fountains, trickling rills, and "creeping Roses and Jasmine bushes to beget the perfume that his soul loves." In Portugal "so much shade is not wanted and the garden is more open," yet in the matter of predominant foliage as well as in many matters of arrangement and decoration, Moorish ideas are still clearly perceptible. "The Oriental delights in the intricate interlacing of flowing lines and arranges his Box edgings in elaborate arabesque patterns. Those who know Spain know the Escorial and must remember the exquisite tracery of the great Box garden there, like the gold wire rims in rich *cloisonné* enamel. Another survival of Moorish times is the wall running by the garden paths, hand high, faced with painted tiles (*azulejos*), along whose top is scooped a deep furrow filled with garden earth and planted mostly with Carnations, Pinks and Gilliflowers, or the dwarf scented purple Iris of Portugal. All these plants love the drought; and so set their flowers can be plucked or smelled to without bending the back—an ingenious device of the ease-loving Oriental."

"In such pleasaunces as these," the author continues, "as Lord Bacon says of his own ideal garden, is to be found 'the greatest refreshment to the spirits of men,' and indeed I know no other commodity of a garden whatever than to reach this end." Then he proceeds to contrast such pleasaunces at length, and with strong expressions of reprobation for the northern ideal, with "the unlovely receptacles for flowers cut out in the turf, bare earth, dreary, like new-made graves for nine months of the year, swept by the east wind in winter, burned up by the sun in summer, and in late spring the contents of green-houses turned into them to make a tawdry unharmonized display of color" which almost invariably do duty for gardens in England. "I freely confess," he adds, "that it humiliates my national pride to contemplate the pleasure gardens of my English friends; even to pass by train in summer-time through the land and see no garden that is any 'refreshment to the spirits' save those of the cottagers." It is impossible here, however, to follow Mr. Crawford through his analysis of the appearance of such gardens as rule in England (and, of course, in America as well), or of the causes which bring it about. We can only say that his words are full of instruction and pass to his concluding paragraphs, which contrast the summer-time effect of the open country in Portugal and in England. In an English June, he says, while the garden is "poor and bare and overtrim," the wood is rich and beautiful in its luxuriance. In Portugal at the same season the garden is shady and luxuriant, but the country is burned bare of all flowers save the Cistus, and almost the only trees which appear are the forests of great Stone Pines. The love for such forests, which seem at first to an Englishman dry and dreary and solemn things, grows with time; but it is always a different love from that inspired by a northern greenwood. "If the Pine forest has its charm it must be as the higher kinds of music and the subtler sorts of literature have theirs, only to him whose taste is instructed to the point of receiving the higher and subtler impressions. An English woodland . . . is charming in its way, a very 'pretty and purling stream' kind of thing; but it is as one of Strauss's waltzes to a symphony of Beethoven compared with the austere beauty of the great Pine forests of Portugal."

Recent Plant Portraits.

LISSOCHILUS GIGANTEUS, *Gardener's Chronicle*, May 19th.—A terrestrial Orchid, discovered in the Congo country by Welwitch. The peduncle of this wonderful plant is said to reach in its native country a height of sixteen feet. It bears a lax raceme of large yellow and green flowers twice the size of those of *Warrea tricolor*. In his work on "The Congo," Mr. Johnston gives some interesting particulars relating to this extraordinary plant. He says:

"In the marshy spots, down near the river shore, are masses of that splendid Orchid, *Lissochilus giganteus*, a terrestrial species that shoots up often to the height of six feet from the ground, bearing such a head of red mauve, golden, scented blossoms as scarcely any flower in the world can equal for beauty and delicacy of form. These Orchids, with their light green, spear-like leaves, and their tall swaying flower-stalks, grow in groups of forty and fifty together, often reflected in the shallow pools of stagnant water round their bases, and filling up the foreground of the high purple-green forest with a blaze of tender peach-like color."

PINUS HALEPENSIS (Catkins and Stamen), *Gardener's Chronicle*, May 19th.

ERYTHRONIUM HENDERSONII, *Gardener's Chronicle*, May 26th.—A very beautiful species recently discovered in Oregon, with pale purple flowers.

SENECIO CRUENTA, *Gardener's Chronicle*, May 26th.—An interesting figure showing the original Cineraria, with examples of its modern development at the hands of florists.

HETEROSPORUM ORNITHOGALLI, *Gardener's Chronicle*, May 26th.—One of the so-called brown moulds, closely allied to the fungus which causes cracks in Apples and Pears, which has attacked and destroyed the *Ornithogalum* in some places in England.

Notes.

An international Horticultural Exhibition will be held at Cologne from August 4th to September 19th.

Professor Count Solms-Laubach, who succeeds Du Bary in the chair of Botany at Strasburg, will in future conduct the *Botanische Zeitung*.

It is proposed to hold an International Exhibition of Botanical Geography, next year, in the city of Antwerp, similar in general scope to the exhibition of a like nature given several years ago in Copenhagen.

The American Forestry Congress and the Southern Forestry Congress will both meet in the State Capitol at Atlanta, Georgia, on the 12th of November, the former in the Hall of Representatives and the latter in the Senate Chamber.

Dr. Maxwell T. Masters, the editor of the *Gardeners' Chronicle*, and Vice-President of the Jury of Awards at the International Exhibition of Horticulture, held in Ghent in April last, has been created a Chevalier of the Order of Leopold by the King of the Belgians.

Mr. W. Y. Klee, State Inspector of Fruit Pests for California, has received a consignment of the parasites which destroy the cottony cushion scale in Australia. Experiments are in progress to ascertain whether the parasite will prove equally destructive of the scale in California, and if so, this natural foe of the scale will be cultivated with a view to hold in check the ravages of this pest of Orange groves.

Saturday, July 14th, was "Iris Day" at Horticultural Hall, Boston. The display of *Iris Kämpferi* was very fine, those shown by C. M. Atkinson, gardener to J. L. Gardner, Esq., being especially remarkable for size and variety. Edwin Fewkes & Son exhibited four seedlings in this section, which were equal to the finest imported varieties. President Wolcott showed cut blooms of hardy Larkspurs which were simply grand.

Mr. E. S. Carman has succeeded in producing several hybrids of *Rosa rugosa*, fertilized by various Hybrid Remontants and Tea Roses, and one, of which the male parent is Harrison's Yellow, was the first rose to bloom on his grounds at River Edge, New Jersey, this year, and has been in flower ever since. The flower has from thirty to thirty-five petals, which resemble in color those of General Jacqueminot. The odor is most delicate.

In the largest nurseries in France not a harrow, cultivator, plow, tree-digger or horse is to be found. The digging is all done with a spade, and the stock is delivered to the packing-yard in wheelbarrows. The ground is manured heavily, the fertilizers being carried on the backs of women, who are paid 40 cents a day of twelve hours. These facts are from an address by Mr. Irving Rouse, of Rochester, read at the late Nurserymen's Convention.

The Association of American Cemetery Superintendents will hold its next meeting in Brooklyn, N. Y., on Sept. 5th. The object of this organization is to exchange ideas on the improvement and beautifying of cemetery grounds. The officers are: President, Charles Nichols, "Fairmount," Newark, New Jersey; Vice-President, F. W. Higgins, "Woodmere," Detroit, Mich.; Treasurer, L. J. Wells, "Greenwood," Brooklyn, New York; Secretary, A. H. Sargent, "Glendale," Akron, Ohio.

One of the most attractive features of the weekly free exhibitions of the Massachusetts Horticultural Society is the display of wild flowers. Several ladies make a specialty of collecting and exhibiting these throughout the season, and as they are correctly named, the botanical name as well as common name being given, the instructive value of the exhibition is considerable. They attract as much attention from visitors as do the more showy garden flowers and exotics.

The white variety of *Platycodon grandiflorum* is now in considerable demand as a cut flower on account of its adaptability to use in formal designs. Some florists object to it because it

looks like a paper flower when on a short stem. There is a purple variety, and occasionally the flowers come part-colored. It is most effective when the spikes of both colors are set in vases, with the white kind predominating, and with a dash of scarlet to give life to the arrangement.

The Daisy-like flower of *Chrysanthemum segetum* is occasionally seen in the windows of Philadelphia florists, but not so often as it once was. It is a common wild flower in Europe, where it is sometimes called the Yellow Cornflower, the same name that is applied to *Centaurea suaveolens*. This Chrysanthemum is quite pretty when it first opens, but when left on the plant a few days the centre grows out of proportion to the outer or ray flowers. It is an annual, and when once established comes up every year, becoming in time a weed, but not a difficult one to exterminate.

At the late meeting of the California State Board of Horticulture, Mr. B. M. Lelong, the Secretary, made an interesting report on Olive culture, which has become one of the regular industries of that State, and is destined to grow largely, since the production of Olive oil can hardly be overdone. There is always a demand for pure oil; but Mr. Lelong procured in San Francisco five brands of oil, labeled Pure California Olive Oil, which were far from being pure. One contained no trace of Olive oil, and consisted of lard and Cotton-seed oil. Two others had but 10 per cent. of Olive oil. Another registered 30 per cent. Olive oil, 35 per cent. seed oils, and 35 per cent. lard, while the best sample contained more than 50 per cent. of adulterants.

In a private letter, Colonel Pearson, whose experience with the rose bug is given in another column, writes that the Black Rot appeared in Vineland on the 25th of June on varieties of Grape most subject to attack. After considerable damage, the disease seemed to subside, but appeared again July 12th. So far, the Concord has suffered worst, and one-half of them are destroyed. Ives are suffering more than usual, so are Norton's Seedling, while Moore's Early are nearly all destroyed. Of fifty varieties on his grounds, only Noah, Elvira, Conqueror and Iron-clad have entirely escaped. In the "Experiment Vineyard," up to the 16th of July, the copper-sulphate seems to have been an efficient preventive of the Grape Rot as well as the Mildew.

Whether or not plants have the power of taking nitrogen from the air is not only an interesting question, from a scientific point of view, but it is one of immediate practical bearing. If this costliest of the elements of plant food can be obtained from the air it would be of the first importance for farmers and gardeners to know what plants have this power, and under what circumstances they can exercise it. This is one of the problems to which Professor Atwater will give his attention as Director of the newly established Storrs School Experiment Station, Connecticut, as he explains in a preliminary bulletin. Professor Atwater has already paid much attention to this question, and he is inclined to believe that leguminous plants, at least, have the ability to secure a portion of their nitrogen supply from the air.

The Oak-pruner (*Stenocorus putator*) is noticed to be unusually abundant in some parts of the country. The beetle deposits its egg in the axil of a leaf stalk or small twig near the extremity of a branch of either a White or a Black Oak; the grub when hatched eats its way through the pith, up the branch for a considerable distance, and then, in order to reach the ground, cuts off the branch, which is sometimes an inch through. In order to destroy the grubs, which are capable of inflicting serious injury, the branches should be gathered up and carefully burned, or if they are not very abundant they can be cut out of the branch and killed. It is not an uncommon sight this year to see the ground under large Oak trees covered with the ends of branches six inches to three feet long. They should be gathered up daily and the grubs destroyed.

The Royal Tuscan Society of Horticulture, established in 1854, numbers nearly 700 members. It has had a marked influence in encouraging improved methods of cultivation of fruit, flowers and vegetables through its exhibitions. The Tuscan School of Pomology and Horticulture, established in 1882, is under the direction of Professor Valvassori. Its object is to train fruit and vegetable gardeners. The course of study, which is theoretical and practical, extends through three years. Boys between the ages of fourteen and seventeen are admitted, preference being given to the sons of small farmers. There are five professors, with an inspector and two gardeners, and, at the present time, thirty-two pupils. The school possesses, for purposes of practical instruction, an orchard and flower and vegetable gardens. The entrance and tuition fees are exceedingly low,

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Hardy Trees for a Trying Climate.

ABRUPT transitions between extremes of heat and cold, and of dryness and humidity, render the climate of the prairies a trying one for many forms of plant life. This is especially true of fruit trees and other plants which have originated under the milder skies of western Europe or in the more equable climate of the Atlantic seaboard. During a few years past the orchards of the Northwest, planted largely with trees derived from foreign stock but which will flourish in the East, have suffered so severely as to convince fruit-growers that hardier races of trees must be planted, or their industry must be abandoned. How to secure these hardy trees is the problem upon which many active minds are now at work. The importation of varieties from climates similar to that of the prairies is being tried on a large scale. Apples, Pears, Cherries and other fruits from the central plain of Europe have been widely distributed, through the efforts of Professor Budd and others. But many close observers and experimenters advocate, as a preferable plan, the breeding up and improvement by selection of the wild fruits already found in the West, just as our most vigorous Raspberries and Grapes have been produced from native species. Perhaps both methods will prove helpful; but long and patient study will be needed before a race of trees is produced with constitutions sturdy enough to resist the severities of the climate and at the same time yielding fruits so delicate in quality as to satisfy an educated taste. The work of improving fruits and producing those adapted to any given locality will devolve largely upon nurserymen, and it must, in the main, be a labor of love, for the profits arising from study and experiment of this sort are remote enough. In the course of his admirable address at the late convention of American Nurserymen, at Detroit, Mr. C. L. Watrous, the President, dwelt upon this theme at length, and our readers will thank us for quoting this instructive extract:

The cycle of unfavorable seasons, seasons of extreme heat in summer and extreme cold in winter, which have proven so destructive to nurseries, orchards, and, in fact, to all species

of fruit-bearing trees and plants in many parts of the West, seems to have run its course, and the lessons taught by it may more than compensate for the losses. It has been observed everywhere that varieties of trees and plants indigenous to that region, or descended from such indigenous forms, have suffered least, if at all. In regions where all fruits descended from foreign ancestors have been crippled, the native forms and their derived varieties have suffered little.

Among fruits, the Apple, most important of all and wholly of foreign ancestry, has suffered most grievously, the Cherry and Plum, also of foreign ancestry, suffering the next heaviest losses. Our Grapes, east of the Rocky Mountains and outside of green-houses, being largely of native ancestry, are still ready for business or pleasure. The Raspberries, Blackberries, Strawberries and Gooseberries, all of native stock, are ready for use. Happily for the country, all these last named fruits have been so thoroughly emancipated from their taint of foreign ancestry as to be thoroughly reliable throughout all the regions indigenous to their wild relatives. It only needs that painstaking and conscientious men shall originate new and better adapted forms in every locality whose conditions render such labor necessary, and shall seek out and propagate such promising chance seedlings as may from time to time appear, in order that each botanical region may have an abundance of varieties well adapted to its needs.

Throughout all of the great empire known as the north-west, native forms of the Plum have now almost or quite supplanted the foreign stock. The Cherry and the Apple still remain to be carried through the same course of evolution, by seedling variation, that has already been passed through by the Grape, the Raspberry, the Blackberry, the Strawberry and the Gooseberry. A glance into the list of the venerable American Pomological Society will show how very few years have been spent in changing the lists of approved sorts from foreign to native names and the different native species into what now supply so large a share of the most pleasure-giving and health-sustaining part of our national diet. The same broad road to improvement is open in case of the Cherry, and especially of the Apple. At the risk of seeming extreme in this regard, I am willing to go on record before you all, as saying that I believe sufficient progress has been made to justify a confident expectation that within the lives of young men who hear my voice to-day, the common and universally propagated varieties of the Apple throughout the great north-west will be the descendants of the native Crab Apples, indigenous to the glades and thickets of the prairies, which have through ages unmeasured and immeasurable by any standard of ours, by variation and natural selection, adapted their race to every vicissitude of their climate and soil, as none of foreign ancestry ever can, except by the same measureless course of adaptation through seedling variation.

This is not all as visionary as it might appear. Already have been exhibited two different varieties of Apples bearing unmistakable proofs of legitimate descent from native thickets, which have excited favorable attention. In many different places careful and zealous experimenters are developing these, by cross fertilization and otherwise, with high hopes for the future. There is no reason why the Cherry should not tread the same king's highway towards perfect adaptation. I hold that a perfectly adapted Grape or Apple should bear its fruit, and, with proper care, be as long-lived as its wild brethren in the thicket. Why should not this be so, as well as that the civilized brain-worker should, by proper living and care, not only live as long in useful activity, but far outlive, the days allotted to the savage roaming the forests and prairies of the same region?

The considerations here urged regarding the superiority of native forms of fruit-bearing trees and plants, apply with no less force to trees and plants for ornament, shade, shelter and timber. The best authorities now agree that American trees are the best for America. The foreign trees with which so many of the older parks and pleasure grounds of the East were planted, from lack of suitable and cheap trees of our own native varieties, are steadily failing, when their days of greatest use and beauty should be just upon them. One of the most eminent authorities in America, in considering these failures, has lately said in bitterness of heart, that if these losses and failures, as lamentable and almost irremediable as they are, will only teach men the folly of proclaiming the worthiness and adaptability of any foreign tree or plant, before it has had a trial of a time extending at least through a period equal to the natural life of a single individual of the species, these losses and their lessons will not have been too dearly bought.

Every nurseryman in the nation should feel his responsibility to himself and to his generation, not only to do what he

can towards originating new and more perfectly adapted varieties of fruits and plants, but also to be on the watch for new and promising forms of chance origin, and to see that each has adequate trial and honest judgment in at least its own botanical region. After due trial and proved worthiness the promising varieties will be propagated by grafts, buds or layers, and disseminated at first in their own botanical regions, and afterwards in other regions, if found able to endure the changes. I fear the most of us have very inadequate ideas of the strain put upon the vitality of trees and plants, by transplanting them to different conditions of climate and soil. In a late most admirable report of the State Geologist of Indiana, is the statement and proofs of the fact, that there exist within the boundaries of that one state no less than seven distinct and well defined botanical regions, each marked by a preponderance of certain native plants, and the absence or scarcity of others, as shown by the lists submitted. This should be a lesson to each of our fraternity, teaching him to test the favorites of distant regions with no more than hopeful distrust, and to prove them well before proclaiming them to his friends, his customers, as worthy of confidence and the investment of money.

By allowing the glamour of a foreign name and the deceptive haze of distance to cloud their judgment, many honest men have had more prophecies to "take back" than have added to their reputations. Careful and intelligent experimentation is the daily duty of the nurseryman. The government experiment stations now provided for in every state, must be aided and largely guided by members of this fraternity in matters horticultural. The task of bringing our promising wild fruits into the realm of civilized usefulness, by change of condition, seedling selection, and cross fertilization with allied forms of native or foreign ancestry, already highly developed, may with especial fitness be vigorously pushed there. It is for our members to furnish the material for experiments and to give freely of their advice and experience as to ways and means most promising of good results. There is no reason to doubt the permanence of these experiment stations nor their generous support by the government, two considerations which entitle them to be used as the head centres of horticultural experimentation in every state, with the full and generous support and aid of every one interested in this work. The road is long, too long for individuals, but with properly directed effort, so that no steps be lost at these permanent stations, we know that the gains must be substantial and certain from year to year and from generation to generation.

The Onteora Club and its Chance for Usefulness.

A NUMBER of capitalists in this city have recently acquired possession of a tract of land more than 1,000 acres in extent occupying the slopes of the mountains near Tannersville, in one of the most picturesque and interesting regions of the Catskill country. Their object is to provide for themselves and their friends retired and pleasant sylvan homes in connection with a small hotel. There is nothing strange or unusual in this; it is what has been done a hundred times before in different parts of the country. The fact, however, that the care and development of the forest which still covers their land should form any part of a general scheme for the improvement of the property, or that the forest should be considered at all under these conditions by business men, is a matter of very considerable interest, as indicating the advance made in this country in the education of the public with regard to the forest and the part which it plays in the economy of nature. Ten years ago, a body of capitalists buying a tract of land for the purpose which has led to the formation of the Onteora Club would hardly have entertained the idea that the care and improvement of the trees which they happened to find on their purchase was a good business investment, or that such property was valuable in proportion as it was permanently covered with vigorous and healthy forests. That they now value the trees, and not only desire to preserve the forest from further encroachment, but to improve it, is a sign that the words which have been spoken in this country of late years for the forest and for forest-preservation have not been spoken quite in vain; and that at last business men can realize that there is more money in taking care of trees than there is in allowing them to be destroyed.

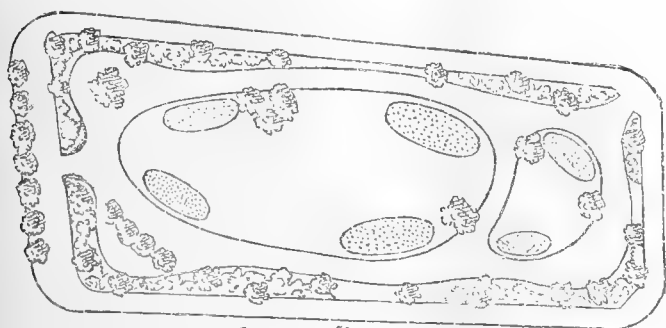
This is only a straw, perhaps, but it is a straw showing that the tide has turned, and that the time will come in America, as it came long ago in every other civilized country, when the value of the forest will be recognized, and the laws upon which the life of the forest depends will be clearly understood and freely obeyed. The leaders in the forest movement must not forget, however, that their task is only just begun. They may have kindled a feeble spark of interest in forest-preservation; but it is in serious danger of being extinguished, unless they can continue their work with unabated vigor and enthusiasm and with broader and more exact knowledge. They must remember, too, that it rests with them not only to teach the people of this country what forests are and what will be lost in their destruction, but that they must furnish definite instruction as to how these forests are to be preserved and developed. These are subjects upon which our people are supremely ignorant. It is easy to say the forests must be preserved; it is much less easy to explain how this is to be accomplished, or what practical measures must be applied in any particular case to produce certain results. General laws of forest management, perhaps, are not difficult to lay down, but special treatment for special cases can only be reached by experience based on experiments, carefully conducted through long periods of time. Such experiments are just what the Onteora Club and other associations are in a position to carry on, and they are what this country needs in order that systems of forest management may be devised and proved by the test of time. Such associations certainly have it in their power to perform an important public service in adding to our slender stock of exact knowledge concerning the best methods of forest management for the United States, and while doing this they can at the same time greatly increase the value of their property.

It is not easy to explain why certain plants look distinctly in place in certain situations and why other plants look as distinctly out of place in the same situations. This is a matter which nature perhaps has settled for us. It is certain at any rate that combinations of plants other than those which nature makes or adopts, inevitably possess inharmonious elements which no amount of familiarity can ever quite reconcile to the educated eye. Examples of what we wish to explain abound in all our public parks, and especially in Prospect Park in Brooklyn, where there is more of nature than in any other great park, and where along the borders of some of the natural woods and in connection with native shrubbery great masses of garden shrubs, *Diervillas*, *Philadelphus*, *Deutzias*, *Forsythias* and *Lilacs*, have been inserted. These are all beautiful plants. They never seem out of place in a garden; but the moment they are placed in contact with our wild plants growing naturally as they do, fortunately, in the Brooklyn park, they look not only out of place, but are a positive injury to the scene. It is not that their flowers are too showy or conspicuous for such positions. The flowers of some native shrubs like the *Elder*, the *Flowering Dogwood* and the *Viburnums*, are as showy as those of any garden shrub. The reason is rather that we have become accustomed to see certain plants adapted by nature to fill certain positions in combination with certain other plants in a given region; and that all attempts to force nature, so to speak, by bringing in alien elements from remote continents and climates, must inevitably produce inharmonious results. Landscape gardeners have rarely paid much attention to this subject, or sufficiently studied nature with reference to the harmonious combination of plants in the construction of scenery, and especially of scenery intended to produce upon the mind the idea of repose. Nature, nevertheless, is the great teacher to which the artist who would hope to imitate her, however crudely, must ever turn for instruction and for inspiration.

The Squares of Paris.

ONE of the best features of the park system of Paris is the number of small squares scattered about in the different quarters of the city. The parks themselves, especially the larger ones, are at such great distances from the crowded centres of population, that the working classes, except on Sundays and holidays, seldom have a chance to visit them, so that these squares admirably serve the purpose of keeping the children out of the streets, and of allowing the poorer people, in the few hours of leisure they have during the week, to get a breath of fresh air and a glimpse of green.

A stranger, on first entering one of them, marvels as he sees how neatly they are kept while so thickly crowded with visitors, reading, working or playing. In plan they are usually quite simple, as the accompanying diagram will show. A broad gravel walk, ten or twelve feet wide, following near but separated from the boundary by occasional shrubbery plantations, encloses a quiet piece of lawn sufficiently open to get a glimpse through to the opposite end, but planted on the sides with trees, shrubs and foliage plants.



Plan of a Paris Square.

There are few attempts at fancy gardening, but much care has been taken to select hardy shrubs and plants with the view of avoiding bare and empty beds during the winter. The condition of the turf is everywhere excellent, for water is freely used, and suitable small playgrounds are provided for the children, which serve the purpose of keeping them off the grass. These playgrounds, which are an admirable feature, are generally formed by simply widening the walks in the corners and planting enough trees there to afford ample shade. There are always one or two flower beds, which are kept bright and attractive during the spring and summer by a constant succession of showy flowering and foliage plants. Permanent seats are provided, but not in sufficient numbers to accommodate every one, but for a very small sum a chair for the whole morning or afternoon can be hired and you can move it about at will.

The only serious fault in all these squares is the stiff and formal appearance of the shrubberies. Almost without exception these plantations are in the form of regular figures—circles, ovals or ellipses—and they are always planted on slight mounds. These two facts detract very much from any effect of naturalness, and it seems a great pity that, when it is so easy to give a varying outline to the groups, it has not been done. It would also be an improvement to plant the borders of these beds with plants or shrubs of low, half trailing habit, and thus, in a measure, hide the sharp, stiff outline between the turf and the dug ground of the bed.

Of course, there are many variations from the typical plan. The Square des Batignolles contains about three acres and is one of the largest in Paris. It is situated on sloping ground, with an open lawn in the centre, through which runs a small winding stream, which broadens out into an almost circular pond at the lower end. The course of this stream, in order to make a little variety, is occasionally interrupted by a group of

rocks, which cause it to widen out into small pools, the margins of which are attractively planted with aquatic plants.

The Square des Arts-et-Métiers is on quite a different plan. Here a broad walk runs down the middle, giving a fine view of the building at the further end. It is surrounded by a handsome stone balustrade, and following this, on the inside is a strip of turf and shrubbery about eight feet wide. All the rest of the surface, with the exception of two fountain-basins, is of gravel, and is thoroughly shaded by eight rows of large Horse-Chestnuts, whose branches touch each other, and thus form a very dense shade over the whole. Seats are provided here in plenty, and as it is one of the most crowded parts of the city, it is always full of people.

The Square du Temple is one of the prettiest of all the Paris squares, or would be if the attempt had not been made to adorn it with statues. There are four of them here, and they detract much from the quiet and repose of the place. At the upper end there is a small cascade falling over artificial rockwork into a rather too formal pond. The trees in this square are exceptionally good.

These are a few of the more important squares, but by no means all, for in Paris there are no less than seventy breathing places, not counting the boulevards and other tree-planted streets. They are usually most attractive spots and teach a lesson which might very well be copied in many of the crowded cities of our country.

Paris.

Henry S. Codman.

Foreign Correspondence.

London Letter.

AMONG the plants certificated at the last meeting of the Royal Horticultural Society, the greatest novelty, in my opinion, was the Japanese shrub, *Cesalpinia Japonica*, shown by Messrs. Veitch, and which has proved quite hardy in Coombe Wood unprotected. It has leaves about a foot long, divided into small pinnæ, like a Mimosa and very elegant. The flower spikes are borne at the tips of the shoots, and are erect, about eight inches high, carrying numerous flowers in a loose way. They are about an inch across and of a brilliant yellow. The whole spike so closely resembles that of one of the Casias (*C. arctura*) that one could scarcely tell the difference without close inspection. The flowers are so showy and the foliage so elegant that the committee were unanimous in awarding a first-class certificate, and every one looks upon it as a valuable addition to hardy shrubs. Another first rate, hardy, Japanese shrub, with evergreen foliage, from Messrs. Veitch, was certificated. This was *Daphniphyllum glaucescens*. It has a dense, bushy growth (about three feet in height in the plant shown), with leaves reminding one of *Rhododendron Catawbiense*, but larger and thicker. They are pale green above, and of a glaucous hue beneath. The specimen shown was not in flower, but there are flowering plants of it at the Coombe Wood nursery. The berries are said to be ornamental, but I have neither seen flowers nor fruit. I have seen the plant for some years past growing in exposed places, and believe it will prove a valuable evergreen shrub here, and probably it may be hardy on the coast and in warm districts of the United States.

A graceful variety of the grass *Eulalia Japonica* likewise came from Messrs. Veitch, and received a certificate. It is named *gracillima*, and most appropriately. The leaves are very long, not more than one-sixth of an inch broad, and elegantly recurve on all sides. The mid-rib is white, as in the variety *univittata*, though, perhaps, not so pronounced. There was but one opinion among the committee, and this was that the new grass was a real acquisition.

Only one Orchid received a certificate (a fact worthy of note), and this was the new *Epidendrum atropurpureum*

Randii, or, as some of your readers may prefer to call it by its synonym, *E. macrochilum Randii*. It is one of the evergreen Epidendrums, with egg-shaped bulbs and stiff, narrow leaves, and a densely-flowered, erect spike. The flower, about 1½ inches across, has olive green sepals and petals, and a broad, wedge-shaped lip, pure white, with carmine blotch in the centre. The perfume is delicious, and another good point in it is that the flowers endure a very long time, several weeks, in fact, if kept cool and in a dryish house. There is not such a great difference between the old *E. macrochilum*, pure and simple, and the new one, but the latter seems much freer in growth and flower. It was shown by Sir Trevor Lawrence, who also showed, besides other choice Orchids, a marvelous specimen of *Dendrobium Bensoniae*. It consisted of about a dozen pseudo-bulbs, each fifteen inches high or more, and every one was densely covered with bloom. But alas! it was an imported plant, and never again will the bulbs put out such a wealth of bloom.

An addition to the numerous race of green-house Rhododendrons has been made by Messrs. Veitch, who have done more in the improvement of this race of shrubs than any one else. They first intercrossed the Malayan *R. multicolor Curtisii*, a small flowered species of dwarf, straggly growth, with another species named *R. Teysmannii*, which has large, bold, pale yellow flowers, the result being a variety called Queen of Yellows. They have again crossed this with *R. Curtisii*, and obtained a splendid novelty called Hippolyta, which is quite a "break" as regards color. The value of *R. Curtisii* lies in its rich carmine crimson colored flowers and this tint has been infused in the cross with Queen of Yellows. The flowers of Hippolyta are of beautiful shape and of a color as rich as those of its parent. We shall have to wait a few years before we can realize what this superb race of Rhododendrons will be; we want to see them on specimens a yard across. I saw some of the older sorts not long since in Fisher's nursery at Handsworth, where these Rhododendrons are grown to perfection.

The display of fancy Pelargoniums was remarkable and the peonies of Messrs. Kelway of Langport still more so. Two thousand blooms were shown, many of them as large as a child's head, of richest color, and a fragrance rivaling that of a Tea Rose. But one new Rose was shown, a beautiful single flowered one, sent by the Rev. H. Dombrain under the name of Striped Briar. The flowers are as large as those of *Rosa canina* (Dog Rose), of a deep and pleasing rose-pink with splashes and flakes (not stripes) of white, while the foliage was scented like that of the Sweet Briar. But the experts said that it was not a variety of the Sweet Briar (*R. rubiginosa*), while others thought it was, so it was decided to send the specimens for identification to Kew. Everybody at the meeting was charmed with it.

London, July 2d.

W. Goldring.

New or Little Known Plants.

Magnolia Thompsoniana ×.

THE interesting and handsome Magnolia figured upon page 269 of the present issue originated, according to Loudon, in the nursery of a Mr. Thompson, at Mile End, in England, eighty years ago. There are colored figures of this plant in the *Botanical Magazine* (t. 2164), in Hilaire's "Flore et Pomone Francaises," v., t. 451, in Reichenbach's *Exotic Flora*, t. 342, and in the "Sertum Botanicum," v., t. 28; but none of these are good or do justice to its beauty. It has been considered a large flowered variety of *M. glauca* (var. *major*, *Botanical Magazine*, l. c.), and by some authors a hybrid between *M. glauca* and *M. Umbrella*. It is probable that the latter supposition is correct, as, although the leaves of *M. Thompsoniana* cannot be distinguished from those produced on a vigorous plant of *M. glauca*, the leaf buds are quite glabrous and destitute of the silky hairs which cover those of that species, while the

broad, strap-shaped, reflexed sepals, and obovate-oblong petals, contracted into a narrow claw, distinctly belong to *M. Umbrella*; the flowers, rather more than six inches across when fully expanded, being intermediate in size between those of the two species. They have, on the other hand, the delicious fragrance peculiar to the flowers of *M. glauca*. So far as I know, *M. Thompsoniana* does not produce fruit; and it is a curious fact that it is much less hardy and much less vigorous than either of its supposed parents, suffering here always, unless carefully protected in winter, and rarely rising above the size of a small bush, although Loudon, in his "Arboretum," published in 1838, speaks of trees at Mile End more than twenty feet high. I shall be glad to see fruit of this plant and to learn if it grows more vigorously in Europe than it does in this country. Our illustration is from a drawing made by Mr. C. E. Faxon of a flower from Mr. Parkman's garden in Jamaica Plain. It shows the three sepals reflexed before the full expansion of the petals.

C. S. S.

Cultural Department.

Herbs for Seasoning.

MINT, Sage, Thyme, Parsley, Chervil, Savory, Tarragon, Basil, Marjoram, Chives and Shallots are the herbs most generally used in the kitchen, but in books and catalogues a number of others, Clary, Samphire and the like, are included, though they are very seldom used. Some of these herbs—Parsley, Mint and Chives, for instance—are indispensable in the smallest cottage gardens, and nearly all are grown and called for in large private gardens. But apart from their utility as herbs used as seasoning, most of them—say Sage, Thyme, Sweet Basil, Marjoram and Winter Savory—are favorite garden plants, and are grown, like the Sage for its pretty flowers in June, and the Thyme for its fragrance at all times.

Spear Mint is a hardy perennial easily grown in any good moist garden soil. If increase is wanted dig up a clump and divide it and replant. The same plantation will last for years. In order to have green Mint early in the year lift some roots in November, plant them in shallow boxes and in January or February bring these into the green-house; or plant a few clumps in a warm frame.

Sage is a hardy perennial easily raised from seed sown in spring. The same plants are good for many years, but in order to have vigorous stock it is well to renew them every few years, and for this may be used some of the many self-sown seedlings that come up every spring about the old plants.

Lemon Thyme is a very sweet herb, a hardy perennial, easily raised from seed sown in spring, and lasts for years; but it is well to renew it every second or third year. The broad-leaved English and sand Thymes are not as good for flavoring as the Lemon Thyme.

Curled-leaved Chervil is a short lived annual very much used by French cooks. It should be sown two or three times a year, and in some part of the garden where it may be allowed to sow itself, as it always grows better in this way than when hand sown. Seeds over a year old will not germinate. That sown in fall survives the winter perfectly.

Sweet Basil is a fragrant annual, easily raised, but only occasionally called for; indeed it is worth more as a sweet-smelling ornamental plant than for use in the kitchen. Sweet Marjoram is a slender growing annual, but easily raised from seed. It is used a good deal, and more esteemed for flavoring than Pot Marjoram, which is a hardy perennial, and a small, neat growing plant, but not very hardy.

Summer Savory is an annual of slender growth, but easily grown in light rich land. Winter Savory is a small plant, a perennial, and not hardy here, but raised from seed sown in spring it soon forms neat little plants. The Summer Savory is the one most esteemed for flavoring. Tarragon is a hardy perennial and much used by English and French cooks. It is a vigorous growing plant, spreading at the root a good deal and loving rich soil. Although the clumps will last for years, it is best to lift, divide and replant them every second or third year, to invigorate and keep them within bounds.

Although the plain leaved Parsley is the best flavored, there is, so little difference between this and the curled-leaved varieties, that most persons prefer the Moss Curled, on account of its pretty appearance in garnishing. Celery is useful all the year round. So long as blanched Celery is on hand



Fig. 43.—*Magnolia Thompsoniana* X.—See page 268.

—from September till first of May—that will do, but during the summer season a supply of young plants must be maintained to furnish green leaves for flavoring.

Chives are very hardy and easily grown and multiply exceedingly. They are the earliest of our garden plants to start to grow. Lift, divide and replant them at least every second year. A few clumps will suffice. For winter use lift a few in the fall, plant them in shallow boxes and bring them indoors. Shallots especially with French cooks, are more esteemed than any other member of the Onion Family; they use the small pear-shaped bulbs—or cloves, as they are usually called—

whole. Planted in spring in rows fifteen inches apart, four or five inches apart in the rows, and three inches deep, in rich ground, they grow and increase very satisfactorily here. They are kept over winter like Onions. While some or most of these herbs should be grown in all well-regulated gardens, a few plants—Parsley, Celery and Shallots excepted—of a kind are enough. And in order to have them for use in winter or at any other time when not growing green in the garden, a part should be gathered and dried. Just as they are coming into flower is the best time to cut them, then tie the plants into small bundles and hang them up to dry. *W. Falconer.*

Strawberry Notes.

THE Strawberry season of 1888 came far short of fulfilling its early promises in this region. The season opened about two weeks later than the average, as our first picking of any account occurred on the 15th of June, though the berries began to color on the 10th, and the last picking was made only a week later than usual. With few exceptions the crop was light. Probably the peculiarity of the season had much to do with this, but the chief cause in my own case was the brown rust, which rendered some varieties absolutely worthless. Some years ago I fancied that certain weather conditions favored the development of this fungus, but it appeared this season under conditions directly opposed to those heretofore considered favorable for its growth.

I am inclined to think now that the young blood of new varieties of vigorous habits is for a time less liable to suffer from this cause than our older sorts. But this is by no means certain, and the subject is one well worthy of study and investigation at the Experiment Stations. If there is any remedy to prevent the ravages of this disease it is one that I have never tried. Aside from the damaging effect this fungus had on the quality of the fruit, it seemed that berries generally of all varieties, even from healthy plants, fell short of reaching their highest quality, and this view was corroborated by the opinion of many others.

Prince, Jersey Queen, Sharpless, Manchester and Crescent are still standard sorts, and the latter, for vigor, health and productiveness, can be depended upon. Manchester seems more and more inclined to rust. Among the newer varieties the Davis is so nearly a reproduced Sharpless, that no one could separate plants or fruit if put together. Jewell, so large and attractive, shows such a tendency to rust on my grounds that I shall have to give it up. May King has proved vigorous, healthy and productive, a bright, attractive berry of good size and fair quality. Belmont, large, showy and of good quality, but like the Sharpless, not an abundant cropper. Henderson and Cornelia are not of much account, either in growth or in productiveness. Cohansey must be abandoned as worthless after two years' trial. Whatever it may do elsewhere, in this part of New Jersey it refused to make a respectable growth.

Among varieties fruiting the first time this season is the Jessie, which is promising, and, so far, healthy. The berries are of fair size under ordinary culture, and the quality is good; perhaps further trial may prove it very good. As I only saved about twenty per cent. of the plants set last season, I had but a limited show of fruit. I think it will do to plant more of it. Another one fruiting here for the first time is the Pearl, which is as promising in all respects as the Jessie. The berries were quite as large and handsome, with a general tendency to a reflexed calyx, a feature I always admire—and in quality it does not suffer in comparison with the more highly extolled and widely known Jessie.

At the exhibition of the American Institute Farmers' Club, on the 21st of June, Mr. H. H. Alley, of Hilton, N. J., made a fine show of a dozen seedlings of prodigious size and bearing qualities, conspicuous among which was one named Hilton, which the judges endorsed as "very large and firm; color, scarlet; good shape; sub-acid; good flavor; said to be a great bearer." Mr. J. J. Davis, of Washington, N. J., also exhibited five of his seedlings, remarkable for size and appearance. Those numbered 10 and 20, very dark crimson, were preferred by the raiser. Both had been ripe for two weeks, but the judges thought his No. 25 the best, of which they report as follows: "A very firm berry; color, very bright scarlet; quality, good; flesh very firm and solid; very promising." E. Williams.

Montclair, N. J.

Some Floral Novelties.

Salvia prunelloides, from the Jorullo Mountain, Mexico, used to be grown in our gardens years ago; then it became lost to cultivation, and has only this year been re-introduced to general cultivation. It is a small-growing, perennial species, tender here, but it can be enjoyed in perfection if treated as an annual. It has small, pale green leaves, and small, bluish-purple flowers. It is not striking or beautiful enough to become a favorite in gardens, and, probably, it will soon drop into oblivion again.

Torenia Fournieri, var. *White Wings*.—*Torenia Fournieri* is now a familiar annual in gardens and well worthy of cultivation. It forms neat bushy plants, eight to ten inches high, which are covered with pretty violet-blue flowers all summer long. In *White Wings* we have the exact counterpart of the

species, except that instead of being violet-blue, the flowers are white. It comes true from seed. While it is a distinct and desirable variety, of the two, judging them as they are growing and flowering here side by side, the blue one seems preferable.

Salvia coccinea is an old and common inmate of gardens, and is, most always, treated as an annual. The typical form grows four feet, often five feet high, and, unless staked, its wand-like branches are apt to break down by their own weight. But the dwarf variety known as var. *pumila*, about half the height of the old form, is a comely plant and the one now usually grown. A new variety, with pure white instead of scarlet flowers, and known as var. *lactea*, has now been sent out. We find it of medium size, and just as free a grower and bloomer as the old scarlet flowered varieties. But, except for variety's sake, neither the scarlet nor the white forms are desirable enough for small gardens; among scarlet *Salvias* *S. splendens* still remains the most useful sort.

Zinnia linariis is a pretty little species from Mexico now in bloom with us. It is of dwarf, bushy habit, has slender, narrow leaves, and bright golden-yellow flowers, and, like nearly all *Zinnias*, seems to be a free flowering plant. Its flowers remind one of those of *Z. Haageana*. But in its present condition it is not likely to become a popular garden plant. Sent out this year.

Glen Cove.

W. F.

Single Pæonies.

THE Pæonies have been exhibited in excellent condition at the metropolitan flower shows this year, the double varieties of *P. albiflora* being numerous and very good, and the colors of the most varied kinds. Some of them are deep purple, purple-crimson, crimson, pink, delicate rose, bluish white, etc. Amongst them the single forms of this species were very attractive to the visitors. They were distinct in character from the double varieties, and are certainly more elegant.

The many species now in cultivation in our gardens form a noble and distinct feature in May. We grow thirty-three species and varieties of species, but this being a rather late season they were not fully in flower until the last week in May. Although not much known at present in English gardens, they were cultivated many years ago, and some of the prettiest of them have been longest known.

P. tenuifolia is a very elegant plant with finely divided leaves, distinct from any other. The large crimson flowers with yellow stamens are very striking. It is figured in the *Botanical Magazine* (tab. 926), where it is stated to grow "naturally in the Ukraine and about the precipices on the borders of the Volga," etc. The first to flower with us was *P. peregrina*, another crimson-flowered Levantine species with large bold leaves, but not so striking as those of some kinds. It was cultivated by Miller, and also by Mr. Salisbury at Brompton. The next to open its flowers was *P. decora*, not the most handsome species, but the flowers were a distinct purplish rose. The downy leaves of *P. mollis* are distinct from those of any other Pæony; the flowers deep purplish red; anthers bright yellow. *P. aretina* and *P. aretina Baxteri* are two good sorts; the first has rosy crimson flowers, and the variety *Baxteri* crimson; they flowered about the same time. The common *P. officinalis* in its single state was very pretty, the flowers being of a rosy tint, the petals rather crumpled. This plant was cultivated in England as long ago as 1548. In Parkinson's time single and double forms were cultivated. The variety *anemonæflora* flowered with us also. In this variety the flowers are purplish crimson, and the yellow stamens are replaced by numerous purplish filaments. Both are figured in the *Botanical Magazine*, the latter at tab. 3175. The plant had been sent from a certain Prince de Salm Dyck about 1830. *P. anomala* came next in order; the flowers crimson, set off by lanceolate leaves. It is not very striking as a garden plant, but interesting as a distinct form. It is figured in the *Botanical Magazine* (tab. 1754), where it is termed the jagged-leaved Siberian Pæony. It is stated to perish in our gardens in winter, not from cold, but from wet. In our garden it stands well enough. *P. Emodi* was next in order; it has large cream-colored flowers with golden anthers. It is also a *Botanical Magazine* plant, figured in 1868 from a plant grown at Glasnevin by Dr. Moore. It is said to be more tender than any other species, being a temperate Himalayan plant from Kumaon to Cashmere. *P. triternata* has flowers of good form, rose-colored. This is distinct both in leaf and flower. *P. peregrina compacta* and *Byzantina* also flowered with this group, and are distinct from the species. All the above flowered the last

week in May and up to the 6th of June, when the following were noted: *P. humilis*, a dwarf species with rosy purple flowers and yellow stamens, the plant dwarf and compact; *P. Wittmanniana*, creamy white, very distinct. This is supposed to have yellow flowers, and was introduced so long ago as 1842. It was discovered by a certain Count Woronzoff in Abeharia, as stated in the *Botanical Magazine*, where it was recently figured. Dr. Lindley also stated that 25 guineas were demanded for a plant of it. *P. Broteri* had rich crimson flowers with yellow anthers, the plant dwarf and distinct. *P. Brownii* is very distinct; it is planted in the rock-garden, and is a neat-habited little plant, but so far we have failed to flower it. *P. Russi* had well formed crimson flowers, with a mass of bright yellow anthers; the leaf and plant distinct. The true *P. albiflora* and varieties *laciniata* and *rubescens* flowered freely, and are the most beautiful amongst the single Pæonies.

They are all very easily grown, and I do not care to coddle them up in pots; even the little *P. Brownii* takes its chance out-of-doors. The border where they are growing has been deeply trenched and well manured. Some decayed manure was also placed on the surface during the winter, but even this is not necessary, as they seem to be all perfectly hardy. They need only to be left alone and will in time grow into large specimens, and the distinct foliage as well as the flowers look well amongst those of other herbaceous plants in a mixed border.
J. Douglas in the London Garden.

Cœlogyne Dayana.—This is a very handsome Orchid, with inflorescence much in the way of *C. Massangeana*, but it differs in the growth in having long, narrow, pyriform bulbs, bearing two oblong, acuminate leaves. The racemes are pendulous, sometimes three feet long and many-flowered; a plant in flower with us now has eighty-four flowers on three racemes; as seen in this condition it forms a particularly attractive object. The flowers, about two inches across, are of a light ochre yellow, while the lip, of the same color, is curiously marked with dark brown. It is a recent introduction from Borneo, and is named in honor of the late Mr. Day, a great lover of this class of plants. This species requires very liberal treatment during the growing season, and to insure good spikes of bloom, it should have a thorough rest, by reducing the water supply to a minimum.

Zygopetalum (Promenæa) citrinum, a charming little Orchid, growing in a compact mass three to four inches high, both leaves and bulbs being of a grayish-green color. The drooping scapes bear a single flower of rich yellow, with a blotch of crimson in the front. This is a species that is not often seen in collections, and yet it will well repay cultivation, being extremely free flowering, and taking up so little room. It grows freely in the Odontoglossum house in equal parts of peat and moss, baskets being preferable to pots. It was introduced about fifty years ago from Brazil.

Cattleya Gaskelliana.—Numerous examples of this fine species are now in flower, and we find it very valuable for filling up the gap between the flowering of *C. Trianae* and *C. Eldorado*, as it is much freer to bloom than *C. Gigas*, which is in season now. It is undoubtedly only a geographical form of *C. Warneri*, which it closely resembles, though there is a great variation in the color of the flowers. They are usually of a pale amethyst, with a deep purple blotch on the front lobe of the lip. The form with white flowers is very rare. This species was introduced from Venezuela about five years since. *Cattleya speciosissima*, also from the same locality, is now in flower, and though not as large and showy as its congener, it is very attractive and exceedingly welcome at this dull season.
F. Goldring.

Kenwood, New York.

The Rock-Garden.—It too often happens that gardeners leave the filling up of vacancies in the rock-garden until after the bedding season is over and then plant in what odds and ends are left. This seems to show a lack of interest in a department of gardening which deserves careful attention, if attempted at all. In summer-time plants in the open air are far more appreciated than those under glass. We see bedding plants all the winter in the green-house and all summer in the flower-garden proper, and, to say the least, the rock-garden should be kept as natural as possible by planting only what is appropriate. The best thing to do in the above case is to grow a few showy, dwarf annuals, and fill them in as vacancies occur. The following are useful for this purpose: *Zinnia Haageana*, *Nierembergia gracilis*, *Statice Suworowi*, *Phacelia campanularia*, *Ionopsidium acaule* and *Limnanthes Douglasii*. The latter plant can be had in bloom very early in spring by sowing in August or September, and is often used for

spring bedding. All the above may be raised in heat, or in the open border after the 1st of May. The list might be supplemented considerably, but these we find sufficient for our purpose.
T. D. Hatfield.

[The introduction of bedding plants like Scarlet Geranium or Coleus into the rock-garden for summer decoration is not more inappropriate than the use of showy flowered border annuals for the same purpose. Plants of either of these classes cannot fail to produce inharmonious and therefore displeasing and unsatisfactory effects in connection with the proper inhabitants of the rock-garden, which by a judicious selection of hardy plants and by the free use of hardy Ferns can be made attractive and interesting throughout the season.—Ed.]

A Good Rose.—Among the comparatively recent additions to the list of useful Roses, "Papa Gontier" seems to be growing in favor on account of its many good qualities. Some fault has been found with it, because of its having lost too much of its lower foliage during the latter part of the winter, so as to render the plants rather unsightly. But though this feature has been noticed in a number of cases, yet it has not been proved to be a characteristic of the variety, because there are many exceptions to the rule. In some instances it is quite possible that the plants may have been overwatered, or perhaps they may have been kept too warm; either of which would be likely to produce such a result. However, the fact remains, that Papa Gontier will be largely planted during the present season, and will also be much used for summer-flowering, both out-of-doors and under glass. The flowers are not only much larger, but have much more substance than the old and popular Bon Silene.

This subject of summer flowering suggests the reminder that one who wishes to cut Roses of fair quality during the summer months, must give his plants attention at the proper time, and not allow the weeds as well as the Roses to take care of themselves after he lets out his fires in the spring. Extremes of temperature should be avoided in summer as in winter, and thorough, though careful ventilation, and plenty of water, should be given in bright weather, if mildew is to be avoided.
W.

Weeds.—At this season of the year the principal and most important operation in the garden is the destruction of weeds. Labor and money will be saved if all surfaces of exposed soil are stirred so frequently that the germinating seeds of weeds are killed before the plants appear above ground. It is hard to realize this always, or to command labor enough in a large garden to make it always practicable, still it is the only economical way in which to deal with weeds. In the case of Purslane, for example, if the plants are allowed to grow large enough to make any appearance above ground, they have to be hoed or pulled up and then raked into piles and carried away and burned or buried deep, or they will root again after the first shower, and the work will have to be done over again. The Purslane, the Shepherd's Purse, the Chickweed, and some other weeds, flower and ripen their seed in a surprisingly short time after they appear, and if the gardener allows them to get any start of him his land will soon get full of their seeds, which will live for a long time under ground and germinate as soon as cultivation brings them near enough to the surface. Theoretically, there never should be a weed of any kind in a garden, but in this climate of hot suns and frequent rains there will always be more or less of them. They should not be fed, however, to pigs, as is often done, as the seeds then get into the manure pile and so increase the work of succeeding years. In large gardens vegetables should, wherever possible, be planted in rows, so that labor may be saved in cultivating them and in destroying the weeds by the use of horse power.

Armeria vulgaris is an old-fashioned garden plant which thrives in almost any soil or situation, but succeeds best on a moist subsoil. It is so common in some parts of England that it is used as an edging for walks in the same way as the lovely *Gentiana acaulis* is used in Scotland. There are several beautiful varieties and all make capital rock plants. The colors vary from white to pale rose and rosy purple. *A. dianthoides*, *A. juncea* and others are classed as specifically distinct, but when grown side by side, raised seedlings of each show every conceivable intermediate form, with regard to habit and color of flower. They must be propagated by division if the types are to be kept constant.
T. D. H.

Plant Notes.

The Double-Flowered Chinese Crab Apple.

OUR illustration represents a flowering branch of this ornamental tree, the *Pyrus spectabilis* of Aiton, a native of northern China and an old inhabitant of gardens, although now less often planted in this country than some of the forms of *Pyrus baccata*, especially those of Japanese-garden origin, of which one of the most useful was figured in an earlier issue of this journal (6), and from which *Pyrus spectabilis* may be distinguished by its persistent calyx lobes, which remain upon the fruit until it decays.

The Chinese Crab Apple, as seen in gardens, is a small shrub-like tree, twenty to twenty-five feet high, with rigid, upright, light gray branches, oval-oblong, finely serrate, leathery leaves, dark green above, paler on the under sur-

Loudon's remark of the Chinese Apple that "no garden, whether large or small, ought to be without this tree," still holds good, notwithstanding all the introductions of the last half century.

C. S. S.

Notes from the Arnold Arboretum.

Genista tinctoria, the Woad Wax, is a dwarf European shrub, one to two feet high, with creeping root-stalks, and upright branches, clothed with dark green, simple leaves, and now terminated with spicate racemes of handsome yellow flowers. It is a plant of no little beauty, very tenacious of life, and capable of spreading rapidly, under favorable conditions, over large areas. In some parts of Essex County, in this State, it has become thoroughly naturalized, and has taken possession of thousands of acres of rocky upland, from which it is practically impossible to exterminate it, and which is thus ruined for pasturage or for tillage. These hills, when the Woad Wax is in flower, seem to have been covered with a



Fig. 44.—The Double-flowered Chinese Crab Apple.

face, which, as well as the petioles and young shoots, is covered, especially along the mid-rib, with a short, fine tomentum. The flowers are semi-double, nearly an inch across when expanded, pale rose colored, fading white, and much lighter colored than the large, showy, bright red flower-buds. They appear here the middle of May, and are produced with the greatest profusion along the entire length of the branches in sessile, many-flowered umbels. The fruit, which rarely sets here, barely exceeds half an inch in diameter; it is round and somewhat angled, or often oblong, and when fully ripe of a dull yellow color, and hardly edible. The Chinese Crab is propagated by grafting on the common Apple tree. There are excellent colored figures of this plant in the *Nouveau Duhamel* (vi., t. 42, f. 2) and in Watson's "*Dendrologia Britannica* (i., t. 50, the flower with the normal number of petals).

golden carpet, and present an appearance quite unlike anything which can be seen in any other part of the United States. There is a tradition that the Woad Wax was introduced into the United States by Governor John Endicott, of Salem, who planted the famous Pear tree which still bears his name, and one of the pioneers of American horticulture, whose garden and farm were well known in the colony before the middle of the seventeenth century. There is, I believe, no other instance in the United States where a foreign shrub has taken such complete possession of so large an area, or has so entirely driven out the natural occupants of the soil. All parts of this plant, especially the leaves and branches, have been used in Europe by dyers to produce a yellow color, although it does not appear to have been cultivated for this purpose, and it was probably the beauty of the flowers which gained for it a place in Governor Endicott's garden, and so led to the ruin of the Essex hills. A variety of this plant, with taller and more slender stems, and

which does not bloom until several days later, is the var. *Sibirica*, once considered a distinct species. This variety, according to Loudon ("Arboretum," ii. 584), attains, in its native country, a height of five or six feet. Here it barely exceeds two feet. Two plants grown in the Arboretum as *G. lata* (*elata*?) and *G. dumatorum* are clearly the same as the Siberian variety. Some attention has been given of late years to the Woad Wax by planters wishing to cover exposed or sterile ground with a low, hardy, fast-spreading under-shrub. It is well suited for this purpose, but care should be taken that it is not planted in situations whence it can overrun and take possession of valuable land, as it will prove a difficult weed to exterminate when once it has fairly established itself.

Cytisus nigricans is one of the most desirable of the dwarf, yellow-flowered, hardy shrubs of the Pea Family, which blooms at this period of the year. It reaches here a height of a couple of feet, with erect, slender, twiggy branches, delicate leaves with three leaflets, pubescent on the under surface, as are the young shoots, calyxes and pods, and elongated, slender, terminal, erect racemes of bright flowers. The whole plant turns black in drying, a fact to which it owes its specific name. It is a native of central Europe, and has been cultivated on account of its beauty for more than a century and a half, although rarely seen in American gardens. *Cytisus capitatus* is in bloom at the same time. A less graceful plant than the last, it is not without its value. Its habit is compact and good, the flowers, in dense, terminal heads, are showy, and it remains in bloom during several weeks. The erect branches, two feet tall, are hispid, like the broad leaflets. It is a native of the mountainous parts of southern Europe and has long been known in gardens.

Free-growing, twining plants, perfectly hardy in this climate, are not very abundant; the introduction, therefore, of a plant of this character of the first class, like *Actinidia polygama*, is a matter of some importance. *Actinidia* (from *aktin*, a ray, the styles radiating like the spokes of a wheel) is a genus of Asiatic plants, many of them twining, of the *Ternstramiaceæ* or *Camellia* Family, of which *Gordonia* and *Stuartia*, two genera of woody plants found in the Southern States, are the North American representatives. They have simple deciduous leaves, axillary clusters of white, fragrant flowers, and a fleshy fruit composed of the coalescing carpels. Five or six species are described. Several Japanese species or varieties are cultivated in the Arboretum, but none of them except *A. polygama* have been sufficiently tested yet to warrant any statement of their merits. *A. polygama* is a strong-growing, vigorous plant, which in good soil will soon reach a height of twenty feet or more, and cover a large space with its vigorous branches, which are densely clothed with handsome, dark green, coriaceous, broadly-acuminate leaves, three or four inches long, with sharp, slender, remote teeth, and contracted into a long, slender point. With the exception of a few hairs on the under side of the mid-rib, they are quite glabrous, and are borne on stout, bright red petioles half their length. The white, fragrant flowers, half an inch across, make but little show, being almost concealed in the abundant foliage. The fruit, which has ripened in several gardens in different parts of Massachusetts, is as large as a pigeon's egg. It is edible and has an agreeable flavor; and is said to be esteemed by the Japanese. The *Actinidia*, however, will be cultivated in this country for its bold habit and handsome foliage rather than for its fruit.

Although they produce far less showy and conspicuous flowers than their Asiatic congeners, the two North American species of *Diervilla* or Bush Honeysuckle, are worth growing, especially in wild parts of the garden. *D. trifida* is a common northern shrub, found from Newfoundland to the Saskatchewan, and extending through the Northern States to Kentucky and the Alleghany Mountains. It often forms dense, low masses of shrubbery on the borders of the forest. It has ovate-oblong, petioled leaves, and axillary peduncles, bearing three small flowers, with narrow, funnelformed, yellow corollas. *D. sessilifolia* (the *D. splendens* of many foreign collections) is a handsomer plant, with sessile leaves, and many-flowered cymes of larger and more showy yellow flowers. It is much more rare and much less widely distributed than the first species, being confined to a few localities on the high mountains of North Carolina and Tennessee, where it inhabits rocky woods and banks.

Few ornaments of the garden are more beautiful or more satisfactory than the old-fashioned twining Dutch Monthly Honeysuckle, once common on every cottage porch, but now, for some reason, greatly neglected and rarely seen in this country. It is a variety of the common European Honeysuckle or

Woodbine of England (*Lonicera Periclymenum*), which some authors call the var. *Belgicum*. It has smooth, purplish branches, oblong-oval leaves, dark green and shining above, and pale on the lower surface. The deliciously fragrant flowers, in terminal heads, are reddish or purple on the outside and yellow within. This plant is perfectly hardy, and remains in flower nearly all summer.

Cornus asperifolia is in bloom. It is a western and southern species, with the habit and general appearance of *C. stonolifera*, but the branches are brown instead of red, and roughly pubescent, as are the leaves on their upper surface. This is a tall, hardy species, but not better in any particular for general planting than our common Eastern Dogwoods of the same class.

A Japanese Bramble (*Rubus trifidus*) is worth a place in the garden on account of the rose colored petals, which make the flower-clusters showy at this season of the year. It is a robust, vigorous plant, with semi-erect stems, clothed with ample, deeply divided leaves. More popular as a garden plant will be, no doubt, the double-flowered variety of the common European Bramble (*Rubus fruticosus*), with its large double or semi-double white flowers, tinged with pink, in which a large part of the stamens have developed into petals. In common with nearly all the innumerable varieties of the European Bramble, it is a very hardy and vigorous plant, growing and spreading rapidly. The variety upon which the leaflets are deeply cut and divided (*Rubus laciniatus*) is a handsome plant, useful for covering rocky banks and other waste places in the garden; it might be seen more often to advantage in this country.

Among the late flowering *Spiræas* now in bloom, the most showy is *S. Douglasii*. It is a native of the North-west Coast, from Puget Sound to northern California, and with two eastern American species (*S. salicifolia* and *S. tomentosa*) forms Koch's small section *Spiraria*, distinguished by its paniced flowers. *S. Douglasii* has simple erect stems, three feet or less high, covered with oval or oblong, coarsely serrated, simple leaves, densely coated on the under surface with white tomentum, and terminated with a dense, elongated panicle of very handsome, bright rose-colored flowers, which remain a long time in perfection. This is one of the showiest of the late blooming shrubs in the collection. *Spiræa salicifolia*, the Meadow Sweet of the Eastern States, is a variable and widely distributed plant, being found in eastern North America, where it bears white flowers sometimes shaded with pink, and from western Europe through Siberia to Mongolia, Manchuria and Japan. In the old world variety the flowers are pink or rose colored. A great deal of attention seems to have been paid to the cultivation and improvement of this plant in some parts of Europe, more especially in Russia, and many varieties (under innumerable names) have been sent to the Arboretum from the St. Petersburg and other Continental gardens. Some of these show traces of the blood of *S. Douglasii*, and many of them are distinct in the color of the flowers, and in their time of blooming, several weeks elapsing between the time the first and the last of the series expand their flowers. The strongest growing and perhaps the showiest of these varieties is that known in many European gardens as *S. Bethlehensis*, a vigorous plant, probably a hybrid, with large, showy panicles of flowers. *S. Billardi*, raised many years ago by the French horticulturist whose name it bears, is worth cultivating also for its showy flowers.

The last of the Spindle-trees (*Euonymus*) to flower here is the North American Burning-Bush or Wahoo (*E. atropurpureus*), a tall shrub or shrub-like tree, found from western New York to Wisconsin and in the Southern States. The flowers are small, very dark purple, and not showy. In the autumn, however, when it is covered with its abundant bright crimson fruit, drooping on long peduncles, this little tree is a beautiful object, although less showy, perhaps, than some of the varieties of the European Spindle-tree, in which long cultivation and careful selection have developed large and showy forms of fruit. The Wahoo (which must not be confounded with the Elm (*Ulmus alata*), which is popularly known in the Southern States as "The Wahoo") is a not infrequent inhabitant of old-fashioned American gardens.

Northern swamps are now white with the flowers of the Swamp Honeysuckle, *Rhododendron (Azalea) viscosum*, the last of the whole family to flower here, and well worth a place in the garden, on account of its late and deliciously fragrant clammy flowers. It is found from Maine to Kentucky, but generally near the coast, and sometimes grows to a height of eight or ten feet. It requires the same treatment and can be grown as easily as the other plants of its class.

July 11th.

7.

The Forest

The Forests of Europe as Seen by an American Lumberman.

WHILE in Europe in 1885 I noticed in Germany, particularly on the lower Elbe, the Spree and generally over the old worn out lands, that much was being done to preserve the old and replant new forest trees in regions from which 200 or 300 years since the forests had been destroyed. At the schools of forestry intelligent men asked, "Why do not you Americans learn by our errors and do something to save your forests now?" The only reply I could make was that I hoped we might begin to save before we were driven to it by necessity as other nations have been.

The new forests over Prussia from Hamburg by way of Berlin through to Breslau and in the circle with the distance from Berlin to Dresden as a radius are doing well. It is common to see plantations largely of pine of from forty to six hundred acres ten, fifteen, thirty-five and fifty years old, all within a few miles of each other, the different heights of trees on the land-lines sharply showing their different ages. Some of the older trees are sixty feet high and eighteen to twenty-five inches in diameter, all growing very even and thick. These plantations are kept clean, with the lower dead branches broken off for use by poor people as fuel, and all this on land that looked light and as if it had been run out like the "old fields" of the Carolinas and Virginia. Many of those new forests in Germany were being cut clear for the timber, lumber and wood, others were being preserved with the best trees cut out and sold under care of foresters. The land itself was being revived and was approaching a virgin condition again. These new forests now furnish the timber of the country.

In the forests of Saxony and Bohemia, up the Elbe and Spree, more particularly of Saxon Switzerland and up the river Elbe into Bohemia, I visited some twenty or thirty mills that were sawing timber grown upon the streams tributary to these waters. Some good trees were worked up here thirty and thirty-six inches at the butt end, and cut the whole length, say sixty to seventy feet long. In the larger mills the whole log is run through gang saws, and then the product is tied up as one log by itself and so sent to market slab and all. The saws used were thinner than ours. Very small logs, too, often no more than five inches in diameter, are cut. The price of this lumber was no more than it is in the Middle or New England States, but of course the Europeans use less lumber than we do. From an extensive examination of Germany, Austria, Belgium and north-eastern France, northern Switzerland and the Duchy of Baden, I should say that under the wonderful care and intelligence of the present system the forests were quite keeping up with the demand for the common lumber-wants of the country, and some even being shipped to Portugal, Spain and the Mediterranean. I visited the saw mills on the Necker and the Rhine, climbed the Feldberg and the Taunus, and saw foresters carefully cutting and sawing the windfall trees and planting a new one for every tree taken out. The Government is doing so much for the forests everywhere. In the little province of Baden, smaller than some of our New England or New York counties, over 100 men are employed and paid by the Government to care for the woodlands. In Saxony and Bohemia I went to the homes of the foresters and found some of them experts in various branches of natural history. The heads of departments were graduates of some school of forestry, and they were advanced as they deserved and held their offices for life or good behavior. The Germans have waited until their timber was cut off before they began to replace it, but they are now prosecuting the work with rare patience and skill.

In the summer of 1887 I visited again the British Isles, and examined the lumber industry of the eastern coast,

of Edinburgh particularly. I saw much of the lumber of Norway and eastern Russia as it was brought into England. There is little large or wide timber left in those countries. Much the same process of stripping forest areas has gone on there as in the countries before named. There is much less timber in Norway, Sweden and Russia available than is generally supposed and its quality is poorer—sound enough, but hard and full of knots, very much like the lumber of lower Europe. Evidently the virgin forests of the north temperate zone are in North America. The impression created by the European forest examination made by me in 1885 and 1887 is this: Trees will grow if properly planted and cared for, but it is like the first attempts in raising the tame grasses from the old farms of the east in the virgin prairies of the west. The soil seems rich enough to grow Timothy, but the cultivated grass will not flourish until the wild "nature" of the soil is subdued by many plowings and trappings of the tame cattle; even so, when land has been stripped of woods and worn by farm crops, it is hard to re-cover it with forest. Just here the aid of science is needed. Here is work for the schools of forestry that have done so much for France and Germany. The forest restoration of Europe is due to science, and is accomplished by men trained for the purpose.

Again the more regularly distributed rainfall of western Europe, especially in the north and Baltic countries, is more favorable to the restoration of forests than in America generally, though in some parts of Europe the soil is so much worn out it is almost impossible to make trees grow. Indeed, all over Europe, and especially east and south of the Mediterranean, and over most of the older settled portions of the Eastern Hemisphere, it seems to have been the especial mission of the Aryan race to destroy and remove the forests from the face of the earth.

In the lumber yards of England, Scotland, Hamburg, Bremen, Antwerp and France I saw much of the timber from America. Our forests are drawn upon to supply the waste of centuries in the old world. It is time we began to think of husbanding our own resources. *H. C. Putnam.*

Eau Claire, Wisconsin.

Correspondence

To the Editor of GARDEN AND FOREST:

Sir.—The writer was much interested in the editorial, "Hardy Fruit Trees," in your issue of June 27th, especially as the conclusions reached coincided closely with those reached in my thesis on "The Crossing and Hybridizing of Fruits," prepared for graduation last year at the Iowa Agricultural College. In American fruit-breeding recourse has been had as yet to native species only in the case of Grapes, Raspberries, Plums and Strawberries. The results have been very encouraging, but a vast field of work still lies fallow. Even with the fruits mentioned, much work remains to be done with the local forms found in the extreme north-western Prairie States. The *Prunus Americana* of the eastern and southern States differs greatly in hardiness from the same species as found in Dakota. This illustrates the fact that the coming orchard and small fruits of the extreme north-western section of the Mississippi valley must originate from the local form of the native species and from varieties imported from similar extreme climates, such as Russia, where many centuries of natural selection have weeded out the tender plants.

Our native species of Cherry, Apple, Gooseberry, etc., all lie untouched, awaiting the hand of the horticultural experimenter. Of the work done in preceding centuries we can take advantage by crossing and hybridizing, which, in fact, are only methods of abridging the process of evolution, by introducing potent causes of variation. In all cases cultivated species from as extreme climates as possible should be used to infuse the desired quality and size.

Besides those mentioned, a considerable number of other native species, such as the Papaw and Persimmon, may be improved by cultivation, selection, and, wherever possible, by hybridization.

This is a proper field of work for the new Agricultural Experiment Stations, and is attractive alike from a scientific as

well as a practical standpoint. It would contribute greatly to our knowledge of the limits of species.

The writer last year sent circulars of inquiry to a large number of experimenters in the United States and Canada, and thus collected a considerable amount of valuable information bearing upon this subject. The general opinion greatly favored crossing and hybridizing as a means of improving our fruit trees and plants.

The work with Russian and American Apples, Cherries and Plums has been begun by Professor J. L. Budd at the Iowa Agricultural College, and gives promise of valuable results.

Atlantic, Iowa.

N. E. Hansen.

To the Editor of GARDEN AND FOREST :

Sir.—I have been interested in the discussions relating to terraces and verandas and other additions to dwelling houses, and have been waiting for some one to suggest a better arrangement than any yet mentioned. This is a terrace with a tiled floor and a frame over it, upon which, during the summer, an awning can be let down in the day-time and rolled back in the evening, while the whole upper structure can be entirely taken away in winter. In summer a terrace of this sort will be cooler by day than one that is not shaded, and in the evening it will be cooler than a veranda, because there will be nothing overhead when the awning is rolled back. In the winter a veranda shades the windows, and the removal of the frame and awning from the terrace freely admits the sunshine, when every ray is needed.

With such an arrangement the terrace can be turned into a summer conservatory for many of the tender evergreens and other plants that would perish under the broiling sun, and for any fine green-house plants, like specimen Palms or plants in flower.

B.

Newport, R. I.

To the Editor of GARDEN AND FOREST :

Sir.—The Itasca Basin, mother of the Mississippi, proves as full blooded as her offspring has indicated. A timbered surface, with porous soil seldom frozen and deeply underlying clay beds, collects the drainage of many square miles and pours this sheet of spring water into the lake and its feeders. Every drop in this ideal reservoir is needed for navigation, manufactures and city water supply.

Clearing the land will cause deep freezing and quick melting of the snow, running the snow water off on the surface with a freshet.

Clearing has commenced, and this land will be stripped, unless we learn to feel, with the Swiss, that the trees which hold the avalanche bleed when they are cut.

H. B. A.

Recent Publications.

Homestead Highways. By Herbert Milton Sylvester. Boston: Ticknor & Co.

Mr. Sylvester, who dates his book from Quincy, Mass., but whose memory dwells amid the hills and woodlands of New Hampshire, found many pleased readers, a few years ago, for a little book called "Prose Pastorals." The same title might just as well have been used for his present volume, which, through its seven chapters dealing now with nature chiefly and again chiefly with rural mankind, preserves as the keynote a spirit of calm, open-eyed, sensitive and not unpoetic meditation. "An Old-Fashioned Festival" treats in a fresh and charming way of the oft-described scenes of Thanksgiving Day and "A Winter Resort" pictures the country school. But the chapters on out-door life are perhaps still more attractive, notably the two on "Running Water" and on "A Snug Corner" of the woods in winter.

In "*Society in Rome Under the Casars*," recently published, Mr. W. R. Inge, M.A., speaks of the parks and gardens of the Romans in the first century as follows: "Partly from want of appreciation of open park land, partly from paucity of shrubs and flowers, neither park nor garden was in keeping with the splendor within [the house]. The flowers were of simple kinds and lacked variety, but they were grown in large quantities, for the graceful custom of wearing garlands, and even the rites of religion, made a constant and plentiful supply necessary. Roses, Lilies and Violets were the only flowers cultivated on a large scale. Green-houses and hot-houses for flowers and fruits were first introduced in our period, and, of course, were soon very common. Winter Grapes and Melons were grown under glass, and we hear of forced* Roses

and Lilies. Fruit trees were planted, sometimes among other trees, sometimes in orchards. The Romans were well supplied with fruit. They had several kinds of Apples, no less than thirty sorts of Pears, Plums, Peaches, Pomegranates, Cherries, Figs, Quinces, Nuts, Chestnuts, Medlars, Mulberries, Almonds and Strawberries. Their ornamental trees were few in number, and this doubtless led to the artificial shaping, before alluded to, which was carried to absurd lengths at the close of the first century. The garden was always intersected by a path, which could be used for riding, walking, or taking the air in a litter. Porticoes for lounging in the open air, and elaborate baths, were comforts not likely to be forgotten in Italy."

Periodical Literature.

Dr. C. C. Parry, the distinguished botanical explorer, contributes to the June number of the *Overland Monthly* (also issued separately) an interesting account of Rancho Chico, General John Bidwell's California Ranch, on the lower Sacramento, near the site of the historical Sutter's Fort. It has long been known as one of the best and most productive farms of the Pacific Slope, abounding in features of natural beauty and famous for the hospitality of its enlightened proprietor. Dr. Parry describes pleasantly the history and the situation of Rancho Chico, the native plants which adorn it and the crops it is made to bring forth. The Ranch is situated in one of the best fruit producing regions in the state. "The Fig and the Olive, the native Walnut and its Asiatic relative, flourish in unrestrained luxuriance. There is no other section in which the Cherry bears more plentifully or with greater certainty of return." One tree in the orchard produced last year nearly a ton of fruit, which sold for an average of ten cents a pound, making nearly two hundred dollars as the return for a single tree in one season. "In May the Apricot begins to yield its golden fruit, and before its day is passed, Apples, Pears, Peaches, Plums, Almonds, Nectarines, Prunes, Quinces and the endless variety of Grapes come one after another to fill their places in an endless round. Aside from table Grapes, all the vineyard product of the ranch is made up into raisins. There is something in the quality of climate and soil that is peculiarly favorable to the culture of the Malaga, and the finished product is sweeter than the average and far excels the more famous Fresno brands in the thinness and tenderness of skin."

There are 25,000 acres in General Bidwell's farm, and some idea of its fertility and of the extent to which it is cultivated, will be gained from the following enumeration of the average crops which it produces: 100,000 bushels of wheat and 50,000 bushels of barley; 1,000 tons of hay; the meat product requires the slaughter of 300 cattle and 1,200 sheep; a dairy of 150 cows produces a gross income of \$1,000 a month. The cannery turns out 370,000 two-pound cans of fruit, not including great quantities of dried orchard fruits. During the height of the fruit season more than 500 persons find employment on the ranch. The most interesting of the numerous illustrations joined to this article is that of a noble specimen of the deciduous White Oak of California (*Quercus lobata*), known as the "Sir Joseph Hooker Oak," in honor of the English botanist who visited General Bidwell during his journey in this country in 1877. The photograph from which the illustration is made was taken in winter, and exhibits the graceful pendulous ramification of this tree much more satisfactorily than we remember to have seen it depicted before.

Recent Plant Portraits.

Botanical Magazine, June.—*CATASETUM BUNGEROTHI*, *f.* 6998; a very striking, free-blooming Venezuela Orchid, with flowers varying from white, the hollow of the spur ochreous, though pale yellow-green to golden.

KOEMPFERIA SECUNDA, *f.* 6999; a common plant in the Khasia Mountains, south of the Assam valley; it has loosely tufted, leafy stems, six to ten inches high, with terminal, few-flowered spikes of showy rose-colored flowers.

HUERNIA ASPERA, *f.* 7000; *Huernia* is an African genus, distinguished from *Stapelia*, which it closely resembles in habit, by its campanulate corolla. The plants of this genus are all south African, with the exception of the species here figured, which is from Zanzibar. Its interest is botanical rather than horticultural.

PALICOUREA NICOTIANÆFOLIA, *f.* 7001.

CASSIA COQUIMBENSIS, *f.* 7002; a glabrous shrub, very common in the neighborhood of Coquimbo, in Chili, with axillary

* "*Festinate*" Mart., 13, 127. See also on the subject Mart., 8, 145 4, 21, 5.

cymes of conspicuous yellow flowers an inch and a half in diameter. It belongs to that section of this enormous genus in which the seeds are parallel to the septum in the two-valved, flattened pod.

ARAUCARIA CUNNINGHAMI GLAUCA (cones of), *Gardener's Chronicle*, June 2d.—From the fine specimen of the glaucous-leaved variety of the "Morton Bay Pine," grown in the Temperate House at Kew. It is an important Australian timber tree, forming vast forests in the valley of the Brisbane River.

SABAL PALMETTO, *Gardener's Chronicle*, June 2d.—A view of a fine group of this well known Florida tree, growing at Jupiter Inlet, on the east coast, from a photograph by Mr. James M. Codman, in the Kew Museum, although credit is not given for it to that establishment.

PINUS CANARIENSIS; *Gardener's Chronicle*, June 7th.

YUCCA FILIFERA, *Gardener's Chronicle*, June 16th, f. 97 and 100; from photographs by Mr. James M. Codman in the Kew Museum (also without credit) and already published in *GARDEN AND FOREST* (April 11th, 1888).

Notes.

The Second Annual Meeting of the Illinois State Forestry Association will open at Springfield, in the State House, on the morning of the 8th of August.

Seven and a half tons of grapes to the acre is a good average yield for a California vineyard, although ten tons an acre is not an unusual crop, and, in a well authenticated instance, fifteen tons an acre have been produced.

Professor L. H. Baily, Jr., of Cornell University, sails for Europe the last of August to visit experiment stations and study the horticulture of the countries he visits. A leading object of his trip is to collect data for the completion of textbooks of horticulture, which he now has partly written.

The annual excursion of the Gardeners' and Florists' Club, of Boston, was a great success, and the gardeners, who have now well earned a little leisure after the labors of spring planting, thoroughly enjoyed their sail on Massachusetts Bay and their visit to the various islands and other points of interest.

At the weekly meeting of the Massachusetts Horticultural Society on July 21st, a new white Pansy was shown, which is quite a novelty, from the fact that it is semi-double, the stamens having been changed into petals. It is of good substance, free flowering and entirely white. It will prove an acquisition for the commercial florists.

Sweet Peas have been greatly improved during the past few years. New colors of remarkable clearness and brilliancy are being constantly introduced. These flowers are great favorites at Newport, Bar Harbor, and other eastern summer resorts, and in no part of the country are they grown so successfully as in the vicinity of Boston, where they are used by the florists in great quantities.

Dutch bulb-growers having found that the sale of cut blooms of Hyacinths and Tulips, which at one time were sent to the London markets in immense quantities from the bulb-fields of Holland, interfered with the sale of bulbs, they have formed an association, the members of which agree not to sell the flowers of these plants. A boycott is established against members of the association who infringe its rules. More than 2,000 bulb-growers have already joined this association.

The railroads have manifested an unwillingness to grant to delegates to the meeting of the Society of American Florists at New York City the reduction in fares usually given to such gatherings. But, nevertheless, all indications point to an immense gathering, and the coming convention will certainly be the largest meeting of florists and gardeners ever convened in this country. Programmes and all information may be obtained by addressing Secretary Wm. J. Stewart, 67 Bromfield Street, Boston.

The Fruit Growers' Association of Ontario held their summer meeting on July 11th and 12th at Picton, Prince Edward County. Rev. Geo. Bell, LL.D., of Queen's College, Kingston, read an instructive paper on Canadian Forests, and the subject of improving fruits by hybridizing and selection was treated by Mr. P. C. Dempsey, of Albany. The meeting was largely attended, and leading specialists in various departments of fruit and flower culture and in forestry participated in the discussions.

Hon. Sidney Root, President of the Atlanta, Georgia, Park Commission, sends us the photograph of a fine Willow-Oak tree now standing in the grounds of E. W. March, Esq., of that city. It was carried from south-western Georgia in 1858, when its trunk was not as large as a musket-barrel. It now measures seven feet six inches in circumference three feet from the ground, and its branches extend over a circle seventy feet in diameter—a remarkable development for a tree thirty-three years from the acorn.

The New York Forestry Commission has revoked all the custodianships under which the islands of Lake George have passed into the control of a few private individuals. Many of the men who were made custodians of the islands have built fine houses, and made extensive improvements upon them, under authority granted by the Land Commissioners. The action of the Forest Commission will cause some hardship to the persons who have had the use of the state's property, but it will be approved by public sentiment.

A recent bulletin of the Ohio Experiment Station gives the most effective methods used in the Prairie States to check the migrations of the chinch bug. But after all the trapping in furrows, burning over stubble, pouring a line of coal tar about fields liable to invasion and other precautions, the devastation by this insect can hardly be held within bounds while the weather is dry. Professor Forbes estimates that in southern Illinois the losses from the depredations of the chinch bug, during five years past, have reached \$25,000,000.

The fondness of the Germans for planting memorial trees is well known. Lindens are most often chosen for the purpose, this tree having gradually usurped that place in the affections of the Germanic people which was once held by the Oak and being now considered the national tree. On the occasion of a recent visit paid by General Moltke to the Spath nurseries near Berlin, he planted an American Linden, of the variety which is known in German nurseries as *Tilia Americana Moltkei*. Near the spot it occupies Prince Bismarck planted a few years ago a specimen of *Tilia argentea*—the beautiful Hungarian Linden to which reference was made in the article on the trees in Central Park recently published in this journal.

Some excitement has been caused among Orchid growers in London by the breaking up of several large collections. No fewer than five of these have been or will be dispersed within a few weeks. The first was that of the late Mr. John Day, a genuine Orchid lover, an assiduous collector of all classes of Orchids, popular or merely "botanical." It was a collection rich in species one seldom sees except in botanical collections. Then followed the small, but very choice and exceedingly well grown, collection of Dr. Duke, a devoted amateur and a true lover of his plants, and the fine collection of Mr. Southgate, at Streatham. Immediately after was sold the celebrated collection of Mr. Philbrick, an eminent lawyer, likewise a great lover of his plants, of which he had a wide and intimate knowledge, and the fifth, by far the most extensive and most important, is that formed by Mr. Lee, at Downside Leatherhead, in Surrey. This Downside collection is immense and wonderfully rich in all that is choice among Orchids, and for the most part admirably cultivated. The first portion has been disposed of at public auction and it will take eight days to sell the entire collection.

The death of the Rev. E. P. Roe, at his home at Cornwall-Hudson, on the 19th of July, deprives us of a collaborator who, we hoped, would do much during many years to come to interest and instruct our readers. Although Mr. Roe's reputation rested most largely upon his labors as a novelist, his horticultural works would have sufficed to win him solid popularity had they been his only productions. The best known of them is, perhaps, "Success With Small Fruits," originally published in the *Century* (then *Scribner's Magazine*), and afterwards issued in book form with the same beautiful illustrations; but others of almost equal merit are "The Culture of Small Fruits" and "Play and Profit in the Garden." It was not as a *dilettante* that Mr. Roe wrote on horticultural subjects. From the year 1874 until his death he was in business as a nurseryman and fruit-grower at Cornwall, and his books were the outcome of practical experience, and chronicled actual, long continued successes. His flourishing gardens and orchards were one of the sights of Cornwall, and the generous hospitality with which he met all who were interested in like pursuits with himself will long be remembered by hundreds of his visitors. Mr. Roe was but just fifty years of age when he died, quite suddenly, of an attack of angina pectoris.

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Irrigation Problems in the Arid West.

IN a recent issue we considered the potentialities of the arid regions of the far west under irrigation. How best to develop these, how best to make fertile and populous this vast extent of country, is a question of national importance. It deserves the attention of both national and state or territorial governments. Much has already been done by individual and corporate effort in the making fertile of large tracts. Large as is the amount of land that has been thus brought under cultivation, it is but a sample of what may be done with comprehensive, systematic undertakings. There must eventually be carried out works of such magnitude that private means can hardly be looked for to take them in hand until their assured practicability has been demonstrated and the attention of great capitalistic enterprises is turned towards the field, as it has towards the construction of railways on a continental scale. The utilization of the waters of important streams that come under the jurisdictions of more than one state or territory involves considerations of equity, and often the harmonizing of conflicting interests, in a way to call for the participation of the national government, as well as does the fact that the greater portion of the land to be improved belongs to the national domain. The splendid work accomplished in India by the British government in the construction of thousands of miles of great irrigating-canals, with the result of making India a strong, and possibly dangerous, rival of the United States in the wheat-markets of the world, gives an idea of the field open to our government. Not until the precipitation from the mountains of the arid region is spread over every possible acre of the plains, can the subject be regarded as settled. It has been urged that the national government appropriate large sums for the construction of irrigating works on an extensive scale in connection with the principal streams; but this policy seems undesirable, for under our present system it would almost surely lead to wasteful expenditure, if not ill-devised schemes. The best means seems to be some method of encouragement to private capital. This might be done either by special acts adapted to particular cases, or by a general law applying

to all irrigation projects beyond a certain magnitude. This method has been certainly most beneficent in its application to railways, for without the encouragement thus given, chiefly in the shape of land-grants, the railways would not have been built and the country would have remained undeveloped and unsettled; the national lands consequently worthless. The railways now need no such encouragement and they build readily through that portion of the country without it; therefore it would be gratuitous to give them a bounty for doing what they are eager to do, and the land-grant policy has very properly been abandoned. It would probably, however, be a good policy for the government to encourage, for the present, the construction of extensive irrigating works, by granting to the parties undertaking them alternate sections of the land thus improved. Otherwise it might be many years before such needed works were undertaken. Government land now absolutely worthless would thus be made very valuable, with rich and prosperous populations created in the wilderness. To guard against possible abuse, it might be provided that the improved land thus obtained by the companies should be sold to settlers at certain fixed and reasonable prices. In this way, for instance, the enormous flow of the Colorado River—the diversion of which for irrigation involves peculiarly difficult and costly engineering—might be utilized, and millions of acres in the Mohave and Yuma deserts and on the Sonora mesa, in California and Arizona, made fertile.

The state and territorial governments have a concern in the matter no less than that of the federal government, their function being administrative, as well as incentive like the latter. It is of such immense importance that the irrigating works should be constructed and operated to the best possible advantage of the public, that, in the states and territories of the arid regions, boards of irrigation-commissioners are more essential than even the railway commissions that have almost universally become the rule. The whole subject of irrigation should be entrusted to these commissions, whose office should be advisory as well as regulative. Colorado ranks probably foremost in having adopted an enlightened system of this kind, and is reaping the benefits in the shape of a remarkable growth of her agricultural interests, which are placing the state on a more secure foundation of prosperity than mining, which has been her chief industry, could ever do. The state is divided into twenty-six water-districts, with a water-commissioner at the head of each, in charge of all matters concerning irrigation. The state engineer has supervision of matters relating to his department. The laws of the state provide methods for regulating outflow and distribution, for organizing enterprises either on a joint stock or co-operative basis, the supervision of water-rates, and the adjudication of disputes.

California also has a well-devised irrigation code. The irrigation laws of Arizona are modeled on those prevailing in California before revision, with some modifications, and need improvement. The irrigation laws of New Mexico are substantially the same as when the territory was a Mexican province. For the development of its great resources a thorough remodeling is needed.

In each state and territory there should be, under the supervision of the irrigation commissioners, a thorough topographical survey of the water-supply, actual and potential, indicating the best lines for canals, the amount of flow in the various streams and the amount that would go to waste without storage, the spots in the valleys and among the mountains where the water of either permanent streams or of torrents may be husbanded by impounding, and where water may be obtained either by artesian or ordinary wells. The knowledge thus given would be of enormous value in promoting the development of irrigation, for settlers could proceed with confidence to utilize the resources pointed out, saving them much uncertainty and possible loss. Therefore such a survey, however costly, would pay for itself manifold.

The study of irrigation methods should be a leading and particular feature of those agricultural experiment-stations established by the aid of the national government in the arid states and territories. For the most part the prevailing systems are characterized by great extravagance in the use of water, so that with proper economy the present supplies could be made to irrigate a much greater area; in some instances probably even twice as much. The best means for the prevention of waste can be studied and pointed out at these stations, and, when ascertained, their adoption should, in the interest of the public, be made compulsory. The products most suitable to irrigation can also be determined at these stations. Irrigation is particularly adapted to horticultural operations. Fruit trees, for instance, require a very much less quantity of water than either grain or grass crops, and while yielding a greater return of profit to the acre, a much greater area may be cultivated from a given supply of water. It is probable that some method of sub-irrigation can be effectively adapted to fruit-culture, since the economy of water would repay the increased cost, while the large returns from fruit-culture in those regions would warrant the considerable expense of preparing the land. Sub-irrigation would almost entirely prevent the loss by evaporation, which is enormous in those regions, and, moreover, it would probably offer a remedy for the malarious conditions so apt to accompany irrigation, for the water would be absorbed beneath the surface, instead of generating malarial germs or gases through the decay of vegetable matter in surface-evaporation under a hot sun. The best means for preventing evaporation in the storage-basins and in the flow of distributing canals, should also be studied thoroughly at these experiment-stations.

With the entire subject considered, and the results carried into practice in the way we have indicated, we shall see an agricultural development in the arid portions of our country that will give them rank in fertility, wealth and high civilization with the famous old cultures once developed under similar conditions in the valleys of the Euphrates and the Nile.

Occasionally some uninstructed person speaks of inexhaustible forests, but by this time it should be pretty generally understood that a forest can be made to yield indefinitely only by restricting its average annual production to its annual increase. The forest products of Maine, for example, diminished alarmingly after the White Pine and Spruce in that State had been recklessly destroyed for many years, and the entire extinction of its most important industry was threatened. But the people of Maine have learned a dearly bought lesson, and realize now that forests can be destroyed, even though they may have appeared inexhaustible, during the lives of one or two generations of men. The Maine forests are not managed in accordance with the rules of scientific forestry as these are understood in European countries, and beyond question the practice could be improved upon. Nevertheless, this practice is based upon the laws of nature and the necessities which arise from existing conditions, and it is upon these that any system of forest management, however elaborately its details may be worked out, must rest primarily. The Maine lumberman has learned that excessive and unrestrained cutting, supplemented by fire, will destroy any forest, and that a forest from which only the ripe trees are cut at stated periods, while the remainder are carefully protected and allowed in their turn to reach maturity, will continue to produce indefinitely, and to pay handsomer returns in the long run than it would under the usual American custom of indiscriminate cutting without regard to future production. The changes which have been gradually taking place for a number of years in the management of the Maine forests have already borne fruit in their improved condition and increased output. They restore to the Pine Tree State its position as one of the most important of the

lumber producing states, not in the actual product of the mills to-day, but in the promise offered by more intelligent forest management of a steady and constant supply of logs in the future. If the present ruinous practice continues to prevail in Michigan, in Wisconsin and Minnesota, it will not be many years before the annual timber crop of those three great states will fall below that of Maine, and perhaps of some of the other New England States. It is not easy to overstate the importance of the system of forest management which is now being worked out in the Maine woods, and which is all the more likely to succeed because it is based upon experience. Its eventual success means prosperity for the State; its failure practical ruin for a large part of it. Other States can learn much from Maine; and especially that by the patient application of a few sensible rules—rules which nature herself teaches—and by the use of a little forethought and a little common sense, a forest can be made more surely and permanently productive than property of any other description.

As we said some weeks ago, there is a growing love among the people of our cities for cut flowers of every description and every grade of costliness. For every variety of flower sold in the shops ten years ago, a dozen varieties may now be counted, and for every street vender who could then be seen, a whole troop may be seen to-day. At first it seemed as though the street vender merely sold at a lower price the stale or refuse stock of the florist—little button-hole bouquets or half-withered bunches of Roses. But he has enlarged his field of enterprise with the growth of patronage, and numberless hands must now be at work for him in suburban gardens and meadows. The Lilacs shown on the street this year were remarkable for quality as well as for quantity, and an especially welcome fact has been the advent of wild flowers in unprecedented quantities. The first to appear were "Pussy Willows," and then Marsh-Marigolds, which abounded at every step and were sold in large bunches for five cents. Since then we have had Buttercups, Field Daisies and Laurel in quantities, and, a greater novelty, the False Spikenard (*Smilacina racemosa*). Pitcher Plants and Magnolias have been offered, and every wild flower which may easily be procured will follow in due season until big bunches of Black Alder berries take the place of flowers. In addition to wild flowers, common garden flowers—Pinks, Pæonies, Roses, Sweet Peas, Corn Flowers and a host besides—began to appear in profusion as soon as the Lilacs were past, so that the New Yorker, even of slenderest purse, has been able to enjoy, almost as well as his country brother, nature's pleasant tokens of the passage of the months.

The Exhibition of Wild Flowers.

I HAVE frequently exhibited a small collection of wild flowers at fairs. They always excited an unexpected interest, however rude the collection may have been. At first I used herbarium specimens, placed in bundles according to their orders or genera, with cards attached containing the botanical as well as common names. But in this way they required constant watching to prevent displacement and destruction by careless visitors.

Recently, however, I have resorted to the woods and other places for wild flowers, and have exhibited them, generally with much satisfaction, in their fresh state.

My conclusion is that the following method is not only neat, showy and simple, but calculated to stimulate a desire in many persons to study the names and botanical arrangement of our native flora:

Take an ordinary table two or three feet wide, and as long as you please—say six to twenty feet. Tack a green or red colored muslin strip around the table to form a curtain, reaching to the floor. Cover the top with white paper. Then at a crockery store you can usually borrow

as many goblets as you need. Fill these nearly full of clean sand and enough water to fill the interstices nearly to the upper surface of the sand. Then put in your best selected plants, as shown in the illustration. The labels are written on cards about $1\frac{1}{2} \times 2\frac{1}{2}$ inches, inserted in a split at the top of the holder, which is about eleven inches long and less than one-quarter of an inch square. These holders can be made of any wood that will split straight. Our redwood answers well.

Thus we have one species in each goblet with a number of specimens convenient for examination. (See illustration.) Do not crowd the plants, and keep the goblets clear of each other. Many a fine display is spoiled by trying to show too many things in a small space. Some taste is necessary in arranging the goblets on the table as to height, color, etc.

Here in California we at all seasons have enough wild plants in flower for a nice show.

In the wet sand in these goblets the flowers will keep several days—some for two weeks—such as the *Calochortus*, *Oenothera*, *Godetia*, *Chlorogalum*, *Trifolium*, *Aquilegia*, etc. Some of the grasses are beautiful, and placed in goblets as above, will throw out their flowers in little tassels, which remain for several days unchanged.

These wild flowers in a flower-show contrast beautifully with the cultivated ones, and furnish an excellent illustration of the difference between the wild and the cultivated.

C. L. Anderson.

Santa Cruz, Cal., July, 1888.

[Collections of wild flowers have been an interesting feature for a number of years at the exhibitions of the Massachusetts Horticultural Society. The flowers are generally crowded together in bunches and placed in narrow vases of water. They soon wilt when treated in this way; and the collections lose much of the beauty and attractiveness they would possess if more taste could be displayed in their arrangement and in grouping the different varieties. Dr. Anderson's suggestion is one which might be tried with advantage at Eastern flower shows.—Ed.]



Wild Flowers for Exhibition.

The Flora of the Florida Keys.

A BOTANICAL survey of that unique portion of our country known as the Florida Keys confirms an opinion that would naturally be formed after studying a map—namely, that the flora of these islands is nearly, if not quite, identical with that of the coast region of the neighboring Antilles. Among the very few species which botanists do not know to grow elsewhere—though it is probable that they may be found in more southern regions—is the newly discovered *Pseudophanix Sargentii*. This interesting Palm is confined to two of the keys, namely, Elliott's and Long, which are over fifty miles distant from each other. On account of the small number of these trees and the precarious conditions under which they grow, they might have disappeared wholly from the world but for their timely discovery by Professor Sargent and the enterprise of Messrs. Reasoner Brothers, of Manatee, in obtaining plants and seeds for cultivation.

The renewed interest which this discovery has awakened in a region which has long been famous among naturalists and lovers of nautical adventure, seems to warrant a brief account of some botanical observations on these islands made by me

during several cruises since the year 1886. A botanical survey of the Reef Keys reveals several marked characteristics, of which the three following are most important:

1st. The number of species is small as compared with similar areas elsewhere, the total number being about 230, which is scarcely one-fourth of the number that is usually to be found in a region of similar extent.

2d. The proportion of woody plants (trees and shrubs) is large, being one-third of the whole number, while in the State of Florida as a whole the proportion of woody to herbaceous species is as one to seven.

3d. The species, as a rule, belong to tropical or sub-tropical orders, or to orders which are most largely represented in more southern latitudes. Thus we find five species of the Myrtle family, which is not represented in other States, and there are fourteen shrubs and trees of the *Cinchona* family, while but one is found in other States. On the other hand, there are no representatives whatever of those large and important orders, *Ranunculaceæ*, *Caryophyllaceæ*, *Saxifragaceæ*, *Onagraceæ*, *Umbelliferae*, *Polemoniaceæ* and *Liliaceæ*, and but one each of the *Cruciferae*, *Rosaceæ* and *Amentaceæ*, each of which orders has from 140 to 270 representatives in the United States.

These peculiarities are easily accounted for. In the first place, these keys present no material differences of altitude and latitude, and very little as regards soil, and differences in those three respects are the leading factors in determining the richness or poverty of the flora of any section. On these islands there are no hills or mountains, no brooks or rivers, no valleys or fresh water swamps, no clay, loam or siliceous sand. The soil consists throughout of coralline and sedimentary lime-rock, calcareous sand and a little mould resulting from the decay of vegetation. The rocky soil is permeated by veins of brackish water, and neither salt nor lime is favorable to great diversity of vegetation.

There is lack of silica for grasses and sedges, and the conditions do not favor that luxuriant growth of Ferns and Orchids which might be expected in this latitude. On the mainland, around the Everglades, there are forests more tropical in appearance than any on the keys. As regards natural vegetation, the keys improve all the way from Key West to the upper end of Key Largo, and there is a corresponding improvement in their adaptation to farming or gardening purposes.

As the best lands for cultivation are those that support the best forests, the latter have been destroyed, in great measure, by the clearing of land, the favorite Pineapple crop being one that is continually calling for new land. Fine old forests of Mastic, Mahogany, Crab-wood and scores of other interesting trees have been cut and burned to make room for plantations, and of some of the rare trees it is doubtful if any specimens are now to be found on the keys.

The botanical characteristics of all the Florida Keys, with the exception of one group, are essentially the same, the variety of species and difference in development being governed by varying elevation and fertility. The inner shores of the keys, and portions of their outer shores, are covered with almost impenetrable thickets of Red Mangrove (*Rhizophora*), among which are interspersed the Black Mangrove (*Avicennia*) and the Red and White Buttonwoods (*Conocarpus* and *Laguncularia*). Inside of these and on more exposed shores are species of *Coccoloba*, *Mimusops*, *Bumelia*, *Eugenia*, *Pithecolobium*, *Genipa*, *Casalpinia*, *Jacquinia*, *Erithalis*, and a few herbaceous plants.

On shores composed of the sand which results from the wear of corals and shells are found banks of the ashy-hued Sea Lavender (*Tournefortia gnaphalodes*), the greener Bay Cedar (*Suriana maritima*), *Borrchia*, *Cakile*, *Euphorbia glabella* and *trichotoma*, and certain coarse grasses. Inside of the littoral thickets, where there is more or less protection from sea winds, we come to rugged fields, cultivated or neglected. If cultivated, they afford a sufficiency of weeds and grasses to satisfy the botanist, but when allowed to lie waste for a year they become impassable by reason of the astonishingly rank vegetation which takes possession of them, everything being entangled and bound together by vines.

The chief natural impediment to locomotion in this almost tropical region consists in the abundance of tough and woody vines, and of trees which grow mainly in a lateral direction, sending out long, slender and often thorny branches near the ground. Several species vary in habit of growth, being shrubs in open ground and high-climbing vines when growing among trees. Such examples go to prove that the climbing habit is attributable to an attempt to reach direct sunshine, without which few plants can perform the important function of seed-bearing or reproduction.

There is no cause to fear the extermination of any herbaceous or shrubby plant, or of many trees, for the planters are constrained to leave skirts of forest around their clearings to protect their crops against the much dreaded hurricanes which sometimes visit these shores. For this reason none of the keys appear to be denuded of their forest covering, though we often perceive that the forests have receded a considerable distance from the outer shores. On the inner shores, and in many other places where the ground is too low for cultivation, the trees are secure against destruction.

There is a group of keys, to which allusion has been made, which presents a singular contrast to the range as a whole, in physical as well as botanical features. Throughout their whole extent of nearly one hundred and fifty miles in length the keys lie nearly parallel with the coast, but on the western side of the open waters called Bahia Honda, in a direction south-west from Cape Sable, there are several long keys whose trend is almost at a right angle with that of the other keys—namely, from north-west to south-east. The vegetation of these is strikingly different from that of the other keys, and most resembles the vegetation found on the mainland south-east of the Everglades.

This group of keys is covered with low and thin forests composed of *Pinus Cubensis*, *Thrinax argentia* and *T. parviflora*. The Pine is wholly lacking on the main range of keys. This and the Palmetto, which is represented by a few trees on Key Largo, are the only trees common to the southern and northern extremities of Florida. The Scrub Palmetto (*Sabal serrolata*) also occurs on these piney keys, and slender specimens of the Wax Myrtle (*Myrica cerifera*), which on the peninsula attains tree-like proportions. These four species, with two or three herbaceous plants, are the only ones common to the keys and the northern portion of the state.

A person who is acquainted only with the vegetation of more northern states, or with that of northern Florida, in traversing these keys will find scarcely a tree or herb identical with or even resembling those with which he has been acquainted. He may hear familiar names in use by the inhabitants, such as Cherry, Mulberry and Cedar, but on examination he will find the species thus designated to be entirely different from those which he has known by such names before. The curiosity is piqued at every step by some unfamiliar and interesting form of vegetation, and if the tourist be accompanied by one of the inhabitants he will learn much of the popular lore regarding names and uses, for these people are remarkably intelligent in regard to the vegetable and animal life of the region they inhabit. It will be found that almost all the adult inhabitants come from the Bahamas, that nearly all the trees and other plants are common to those islands, and, in short, that these islands have much more in common with the Lesser Antilles than with the Florida mainland.

A tour of the Florida keys reveals nature and society under such peculiar conditions that any one who has never visited this insular region may rest assured that there remains in store for him at least one source of novel and enjoyable experience, though he may have traversed the mainland of the United States from Maine to California. As regards conformation and soil, the inhabitants and their pursuits, the surrounding waters and the marine life they support, these coral islands differ essentially from all other portions of our vast country; but in no particular do they present so striking a dissimilarity as in the vegetation which covers them.

Jacksonville, Florida.

A. H. Curtiss.

Foreign Correspondence.

London Letter.

THE Rose Show season began in London with a great exhibition at the Alexandra Palace in the last week of June, and rather early for exhibition blooms. On nearly every stand were fine flowers of Lady Mary Fitzwilliam, not a new Rose, and yet not common in cultivation, one of Mr. Bennett's great successes. Everybody is charmed with the Rose, its large size, superb form, and delicate, soft pink color. Then, again, its vigorous growth and free habit of flowering make it a first-rate garden Rose. It will certainly in time divide honors with the beautiful old La France, with which an uneducated eye always compares it. A sport from Lady Mary is called Lady Alice, which, I believe, originated in the Cheshunt nurseries. It differs from its sister Rose in color only, or rather in the absence of color, as the bloom is almost a pure white.

The best white hybrid perpetual at the show was Violette Bowyer, but this, as well as other white Roses, like Merveille de Lyon, will be better later in the season. A very rich-colored Rose is Ulrich Brunner, which still may be called a new Rose, and one that is likely to become a favorite, as the "build" of the flower is admirable.

Among the newer Tea Roses were Madame Cuisin and Madame de Watteville, both of which differ from most other Teas in color. Their flowers, instead of being entirely of one tint, have the petals exquisitely washed or flushed with a clear pink, while the form in both is perfect, especially in the half-expanded stage. Ladies fix upon these two Roses at once, and that is not a bad test of their merits. Grace Darling, another of Bennett's seedlings, was very fine, the richness of the color, a clear pink, being most pleasing. This is a Rose of the highest merit, not only for exhibition, but as a garden Rose. I saw to-day a bed of it, and every bush (there were a score or more) was literally covered with bloom—good, well-formed flowers, fit for exhibition. The habit of growth and foliage also being so vigorous, leaves nothing to be desired. It has been in flower in the open since the first week in June. A new Tea, shown by Mr. Prince, of Oxford, named S. A. Prince, has flowers of fine form, pure white, and scented strongly. It is, of course, premature to speak of its merits from exhibition blooms alone.

The new hybrid (also one of Bennett's) named Mrs. John Laing, was marvelously fine, as may be gathered from the fact that it took the first prize in the class for any kind of Rose. This Rose is a triumph of English Rose raising, and will tend to refute the prevalent idea that good new Roses can only be expected from the Continent. I have this week had a private view of a very beautiful new Rose, which Mr. Bennett has named Cleopatra. It is a true Tea, and if I were asked to compare it with an old sort I should say it was most like Catherine Mermet. But it is different, because finer in size, in form, in color and in perfume. It is one of the deepest "built" Teas I have seen, and the petals are large, of wonderful substance, as if chiseled out of some hard material. The color is a soft rose pink, with a suspicion of buff in the tint, and therein lies its peculiarity. The flowers, three parts open, are matchless in form, and the perfume is exquisite. Cleopatra has been seen by a few people only, but all agree that she is a veritable queen among Roses. I also saw at the same nursery the lovely Princess Beatrice, which has always seemed to me one of the very best of Tea Roses, and yet I was told the other day by an American nurseryman that it was considered of no value with you. But surely the flowers cannot have been seen in perfection. It could scarcely have had a fair trial, seeing that it was only sent out last June. The flower is large, the form perfect, the scent unsurpassable, and the color delights everybody. In fine blooms the outer petals are yellowish white, washed with rose, the inner all closely packed, an apricot yellow deeper towards the centre. The leaves have ruddy-tinted stalks, and are broad and of a very deep green color. If I were confined to a select dozen Tea Roses, Princess Beatrice would certainly be one of them. Another new Tea that has been talked about a good deal this season is Sappho, which Messrs. Paul, of Waltham Cross, have exhibited. I should compare it with Madame Berard, the near relative of Gloire de Dijon, as the blooms are alike in color, though different in form. Sappho has prettily-shaped flowers, very full and deep, and of a warm apricot yellow, and perfumed with the delicious scent characteristic of the old Gloire de Dijon. As a pot bush it is uncommonly vigorous, and the large number of flowers and buds show it to be a free flowerer.

This year has brought an exceptionally large crop of new varieties of the Polyantha Roses. Bennett has sent out two named Golden Fairy and Little Dot, which look uncommonly like twins. Both have tiny, very double flowers of a deep apricot tint, flushed with pink, but Golden Fairy is the lighter of the two, and the half-open

flowers look like the buds of W. A. Richardson, as the color fades at the edges of the petals, and gives that soft gradation of tint which all admire in the Richardson Rose. These fairy Roses are favorites with the florists already, as they work up so nicely as button-hole bouquets. The Cheshunt Pauls have shown a pretty new miniature Rose, called Red Pet, which is really a pigmy China Rose. The color is bright crimson, and though the blooms are not up to the florist's ideal, they are very telling on account of their color and profusion.

London, June 30th. W. Goldring.

New or Little Known Plants.

Cypripedium Californicum.*

THIS species of Lady's-Slipper, from the Pacific coast, is notable for its large leafy bracts and for the number of its flowers. The stem is sometimes two feet high, with numerous leaves, which continue to the top, with little reduction in size, the upper bearing in their axils a single, nearly sessile flower. The sepals and petals are greenish yellow, short, and nearly equal in length, the two lower sepals united into one, and about half an inch long. The saccate lip is but little longer, and is white or tinged and spotted with pink. The species is common in the mountains of northern California, growing in the open woods in damp soil or swamps.

S. W.

Plant Notes.

Two Rare Orchids.

ORCHID lovers have been interested of late in the simultaneous blooming of two rare plants in the possession of Messrs. Siebrecht & Wadley, at New Rochelle. The one, *Zygopetalum Sedeni*, formerly belonged to the Morgan collection; the other, a white variety of *Cattleya Gigas*, is certainly unique, since it is the only specimen known to exist. It came with a lot from Siebrecht & Wadley's collector in Colombia, who reported that there was a new species among them, but the mark for identification was lost in transit, and the plant was not known until it flowered last season. This year it is much increased in strength and size, and now bears four spikes of bloom.

The flowers are held boldly erect; the petals and sepals stand out, and are pearly white. The lip is large, crinkled into a little frill around the edge; it has a slight mauve tinge, like a delicate reflection. The throat is pale yellow, while on each side is the yellow eye-like spot which characterizes *C. Gigas*. There are four or five

**C. CALIFORNICUM*, Gray, Proc. Am. Acad., vii. 389; Bot. Calif., ii. 138. Pubescent, leafy; leaves ovate-lanceolate, acute, the upper narrower and acuminate; flowers three to six, on short pedicels in the upper axils; sepals greenish white, broad, acute, one-half inch long, the lower united to the apex, about equaling the narrower petals; lips slightly longer, oblong-ovate, white or pinkish, pubescent within at base; capsule reflexed.



Fig. 45.—*Cypripedium Californicum*.

flowers on each peduncle, large and showy. *C. Gigas* is generally regarded as the finest *Cattleya* known, and this new variety certainly deserves high rank among those with pale-colored flowers. It is probably the most striking novelty in Orchids now in the country.

The rare *Zygopetalum Sedeni* is an interesting garden hybrid, the result of a cross between *Z. Maxillare* and *Z. Mackayi*. It has narrow lanceolate leaves, and strong spikes of singularly

dark flowers. The sepals and petals are dark purplish brown, having a regular border of pale green; there are no bars, as in the case of the parents. The broad, round lip is of a brilliant purple, veined at the margin; the ruff a bright bluish purple. It is very distinct from any other *Zygopetalum*, though approaching *Z. Mackayi* in habit.

This plant was originally imported by Mrs. Morgan, but it never flowered until in the hands of its present owners.

New York.

Emily Louise Taplin.

Cultural Department.

Strawberries.

WE have tried most of the leading kinds of Strawberries here and have now twenty-eight varieties in our trial bed, but never have had a better Strawberry for our ground than Sharpless. It is a vigorous grower and retains its foliage in good condition throughout the summer; it is a heavy cropper, and its berries are exceptionally large, handsome and well colored, and with us it always ripens to the tips. But, except under high cultivation and in deep, rich, moderately moist land, it is not as desirable as some others. Our first berries this year were pronounced by connoisseurs as "most delicious," but this quality in Sharpless is unusual. In May abundant rain fell with no very high temperature—just such weather as is most suitable for Strawberries; June opened dry and warm, the best weather for ripening fruit, and to these causes are attributed the fine quality of the early berries. But the 16th of June brought hail and rain, and soon after the Sharpless berries assumed their characteristic sourness. Henderson, Hovey, Belmont and Wilder are of much better quality, but each one of them with us has some fault—lack of vigor, uneven ripening, small fruit, or other drawback—and even Louise and Mineola, both delicious berries and raised not far from here, do not, after a two years' trial, warrant us in using them for a main crop. As a heavy cropper and for use as preserves, the Crescent has been our favorite; but in its fresh state it is much more acid than Sharpless, and not nearly so large or handsome. For fine quality and aroma, our American varieties are not as good as the European Strawberries, but, unfortunately, these are of no use here. All the finest English varieties have been imported and grown on this place, and every one of them has been a failure.

Farmers and market gardeners, as a rule, grow their Strawberries in the open field, in rows two and one-half to three feet apart, and after the first year allow the runners to grow and remain, so as to form matted beds. But we have no room for horse cultivation. Farmers generally plant their Strawberries in spring; we always plant in August. And from this planting we not only get an excellent crop of fruit the next June, but we always get our very finest and largest berries from these young plants. And we so manage it as to renew half of our plantations every year; the young or one-year-old plants yield the finest berries, the two-year-old plants the heaviest crop.

Strawberries for home use should have the very best ground in the garden. Plan in spring where the next Strawberry bed is to be made, and then plant the ground with Peas, Snap Beans, Cauliflower, Beets, Onion-sets, or any other early crop that has time to mature and be off the ground before the end of July. It is not advisable that Strawberries should succeed Strawberries, still we have a piece of deep, moist land, so well adapted for Strawberries, that we have cropped it with them continuously for several years, but, notwithstanding the most liberal treatment and annual renewing, the plants are showing signs of enervation, and are not now as luxuriant as they used to be two or three years ago. After clearing off the summer crop apply a coating, two to three inches deep, of well-rotted farm manure, then double dig the ground with forks, being careful to break it up very fine and loose and keep the manure not deeper than four or five inches under the surface of the ground. Now measure and mark off the patch in rows twenty inches apart by drawing drills an inch or two deep. You may plant at once or delay till your plants are ready or convenience will permit.

Set out the plants eighteen inches apart in the rows, or, if an extra heavy crop is desired the first year, instead of setting them out singly set them out two together. Water well after planting, and in the event of dry weather, continue to water the plants two or three times a week while the drought lasts. The stronger the plants become before winter sets in, the larger the crop of berries they will bear next summer. Throughout the fall keep the young plants free from runners

and the ground perfectly clean and well hoed. About the middle of November break up some barn-yard manure fine and scatter it broadcast over the Strawberry ground, say an inch or more deep. Then again, about the middle of December, or after a firm frost sets in, and before lasting snow may be looked for, scatter some sea thatch, sedge or salt hay two inches deep over the plants, and so as to cover the whole patch. This mulching and covering prevents the plants from being thrown out of the ground by frost, and also saves the crowns and leaves from being injured by hard frost, searing frosty winds, or warm sunshine.

In field cultivation this straw covering is allowed to remain permanently, and the Strawberry leaves and flowers come up through it in spring, and it also serves as a summer mulching to keep the fruit clean. This is not our plan. The covering is removed early in April, the ground is cleaned and cultivated two or three times, and then about the 1st of May mulched again with straw material. In cultivating the ground use a prong-hoe; this loosens and breaks up fine the ground between the plants and allows a ready ingress for rain and air. Its effect upon the plants is shown in their vigorous condition. Of course, any time before the fruit begins to ripen is soon enough to apply the summer mulching, but by doing so early in May there is not the danger of injuring foliage or flowers, which there would be were it delayed till the end of the month.

Strawberries usually begin to ripen here about the 10th of June and last till the end of the month; this year we did not pick our first dish till the 14th of June, but they lasted till the 4th of July. Some days before they begin to ripen the cat-birds and robins are particularly voracious and peck every softening fruit. In private gardens, where these birds find shelter among fruit and shade trees, shrubs, bushes and vines, they are more numerous and destructive than in the open fields. We circumvent their attacks by erecting a temporary frame around and over the beds, and spread over it some netting, as described on page 176. As soon as the strawberries are gone the frame is removed. The netting is folded up and laid indoors till the first of September, when it is brought out to cover the grape-vines; the stakes are needed at once for Dahlias, Hollyhocks and Sun-flowers.

After the busy season is over the one-year-old plantations are thoroughly cleaned; weeds and straw mulch are removed, and the surface is loosened with a prong-hoe, care being taken not to injure the runners. This allows them to root readily. The two-year-old plantations are dug out and removed at once.

Before the end of July many of the runners are large and sufficiently rooted for setting out, and, the ground being ready, had better be transplanted at once. By using potted runners we can plant at any time, in dry or moist weather, and if the ground is not yet ready for the new plantation, we can lift and store the pot plants close together somewhere by themselves, and, in this way, are enabled to strip and clean the plantation from which they were taken. We use three and one-half and four inch pots; a double row of these is plunged in every second alley to the depth of half an inch below their brims; half fill them with sandy soil, then place a runner crown in each pot, bending the thread of the runner in, too, and then fill up with the same sort of soil. It is very easily and quickly done. The runners root readily in the fresh soil and in fourteen to twenty days have filled the pots with roots, and may then be severed from the parent plants, and the pots lifted out and removed from the beds. From this time till fruiting time next summer not a runner or a weed should be allowed to grow in the plantation.

Glen Cove, N. Y.

Wm. Falconer.

The Currant and its Cultivation.

THE currant crop has been a good one and the demand has been equal to the supply. It is not strange that so excellent a dessert fruit when fully ripe and so fine a canned fruit either alone or with raspberries for winter use should be in heavy demand. And yet in too many instances the quality and size of the fruit is allowed to suffer from the attacks of the Currant worm when a little hellebore and its timely application will prevent the loss. It is no uncommon spectacle even in gardens ordinarily well kept to see Currant bushes entirely stripped of their foliage, and the fruit ripening prematurely exposed to the full rays of the sun, inferior in size, and deficient in flavor. Such fruit is not fit for table use in a fresh state, neither can it be as good for canning. A tablespoonful of white hellebore to a two-gallon pail of water sprinkled on the bushes, will rid them of the pest and the fruit will ripen in perfection.

Of course there is no danger from the use of this drug even to those who hold that the flavor of fruit is impaired by washing. It is surprising, by the way, that water in the form of rain and dew does not rob a currant of its flavor, while dipping the cluster into cool clean water is said to have such a deleterious effect upon its quality.

Satisfactory crops of currants are only possible with good culture and a soil enriched with plenty of manure. The old Red and White Dutch varieties will produce fruit that will compare favorably in size with more modern introductions. The large fruit of the Cherry and Versailles Currants will depreciate in size by neglect and the productive qualities will be seriously impaired. As a rule I have found the latter to be the more productive of the two, while the White Grape is the best of all in quality. For the last decade these three varieties have been the most popular ones before the public. Some four years ago when Fay's Prolific was announced the claims for it were regarded as extravagant, but now after it has been duly tried it has been found to be one of the few new fruits which justified the rosy promises of the advertiser. Those who had the courage to try the new fruit in a small way regret now that they did not venture to buy more. Such a fruit is a fitting monument to any man's memory. A White Currant of as fine flavor as the White Grape with the other merits of Fay's would be a welcome addition to the list.

In Black Currants we have not found any great improvements. The most recent addition we have tried is Lec's Prolific, but the improvement over the old Black Naples is very slight, if any. While young there is a semblance of increased size and productiveness, but it does not seem so apparent after the bushes reach maturity. The demand for this fruit seems on the decline. Its peculiar pungent flavor and aroma are disagreeable to most native Americans, but when made into jellies or preserves it is distinctly good, and its various preparations are supposed to possess valuable medicinal properties.

Some years ago the late Shelby Reed, of western New York, sent me several samples of wild Currants and Gooseberries, natives of the great western plains of Colorado. These varied in color from black and red to yellow. They were of good size and very productive. Whether he attempted to improve or acclimate them at his home I do not know, but I consider the field a fine one for experiment, and well worthy the attention of those who have the time and inclination to enter it.

Montclair, N. J.

E. Williams.

The Vegetable Garden.

CONTINUE to sow Snap Beans once a week in rows two to two and one-half feet apart. About the middle of the month sow French Etampes in rows eighteen inches apart and in a warm, sheltered spot; should these not be likely to ripen before frost comes, frames and sashes may be placed over them about the middle of September. Sow Bliss' Abundance and McLean's Advancer Peas in rows two feet apart; they will not need brush. Plant out Savoys, Cabbage and Cauliflower as ground becomes vacant. In localities where this planting will be too late Burpee's Extra Early Express Cabbage will yet form good hearts; it is a very quick-heading kind. Give Celery, either in the seed-bed or planted out, abundance of water; this is a plant which, from sowing till harvesting, should never know what drought means. Use rich land and mark it off into rows three to four and one-half feet apart, according as the Celery is needed for early or late use; if for early use it must be earthed up full in the rows, hence needs more room than if for late, when handling only is necessary. Sow a little Chervil in some odd corner for use in fall and to live over winter. Thin out Chicory plants to an inch or two apart in the rows. Cory was our best early Corn; sown late in May, it was ready for use by the middle of July. Marblehead was a few days later, but of better quality. It is too late for fresh plantings of Corn now. Egg plants are now swelling fruit. Do not let them suffer from drought and keep the potato beetles hand picked. A succession of Cucumbers may still be raised in frames. In the case of the vines out-of-doors, pick off all mature fruit, even if they are not wanted; by this means the old vines will continue longer in bearing. Scatter fresh tobacco stems under and about the vines to dispel aphides. Prevention is better than cure. Melons are now setting and swelling their fruit. Take pieces of boards, say four by six inches, and place one under each melon to keep it off the damp ground. Staves of old cement barrels are good for this purpose. Keep open pathways between the rows of hills for convenience in gathering; if the vines are allowed to grow together, we are apt

to tread upon and destroy them in gathering fruit, pulling out weeds, or in doing other work among them.

Sow Lettuces for succession and plant out a little every week. Some Endive may also now be sown for plants to be used in November. Endive is not in demand, if good Lettuces can be had, but full-grown plants of it can be easier kept in cold-frames in winter than mature Lettuces.

Keep seed Onions growing as long as possible. The ground after them will be in good time for Strawberries or Spinach. Potato and Top Onions and those raised from sets, also Garlic and Shallots, are now harvested. Tie them into bunches and hang them up, or crop them close and spread them out on the floor or shelves in some dry, airy building.

Get in a main crop of winter Beets. Sow in rows eighteen inches apart. Treat Turnips in the same way, only they may be sown a week or fortnight later than Beets. Some people like winter Radishes—that is, such sorts as Scarlet Chinese, which are grown into good sized roots, and gathered and stored in moistish sand in winter like Carrots or Turnips. Large roots are not desirable; those of about one and one-half to two inches in diameter are large enough. Sown about the 25th of August, we get capital roots for storing; in less favorable localities they should be sown ten days earlier. But they are not as desirable as the succulent French Breakfast and Wood's Frame, which can be kept growing in frames or green-houses during winter. Finish sowing winter Carrots; if sown later than the first week of August they are not likely to be large enough before frosty weather sets in. The Half-Long Red Stump-rooted is an excellent sort. Among Tomatoes, Farquhar's Faultless was our earliest to ripen this year, but it is a very uneven, deep-ribbed sort. Early King Humbert and Volunteer were about two days later than Faultless; the Humbert, although extremely prolific, has not the large size or round form of the beautiful Volunteer. Early Advance came next in point of earliness; then Acme, and then the other varieties all about the same time. G. C.

Long Island.

Some Floral Novelties.

Larkspur, Stock-Flowered Rosy Scarlet, is a new variety, with single, but often double, flowers, of a rose, rose-red or rose-pink shade. It is as free-growing and tree-blooming as any other annual Larkspur, and it comes true from seed, but while there is in this variety a new shade of color among these Larkspurs, we do not get in it anything very striking or of much importance.

Statice *superba* is an annual species from Turkestan, sent out this year. In habit and general appearance it somewhat resembles *S. Suworowii*, which appeared a few years ago. Its foliage is sinuately cut and lobed and produced in flat rosettes, while from the middle of these tufts arise much branched or plumose spikes of small, pale, rose-purple flowers. But, so far, it is neither as pretty nor as vigorous as *S. Suworowii*; at least, so it appears here, and the two species are growing together.

Drummond Phloxes have, of recent years, been considerably improved, especially in the increased size and brightness and variety in color of the flowers; this large-flowered race is now known as grandiflora. Florists have succeeded in doubling the flowers of a white, and also of a red, variety, but the doubling is only semi-double, and, as regards the beauty of the flowers, it is more of an injury than a benefit. The double white comes fairly true from seed, but of the double red only a small percentage come double. Under the name of grandiflora fimbriata, there is a purple-flowered variety, with fimbriated or notched edges and a narrow edging of white, but, except as a novelty, it is of little value; the color is too poor. Evolved from this fimbriated flower and now distributed under the name of cuspidata, comes an extraordinary flower; each lobe of the corolla is furnished with one long, narrow, pointed segment and two lesser ones, and all bordered with a narrow, white band. But here again the color is only dark violet-purple. It is also distributed under the name of Star of Quecledenburg. Its singular appearance makes it a striking novelty, but, so far as beauty, showiness or general usefulness is concerned, it is not as good as the common, plain-flowered varieties. A large proportion of the plants come true from seed. There is also a dwarf race of Drummond Phloxes that are indispensable in their way; they are used in beds and borders with much neatness, but their greatest usefulness is as pot plants, for which purpose they are admirably adapted and largely grown by some florists. H. F.



Olive Tree in the Garden of Gethsemane.

Orchids in Bloom.—*Lalia callistoglossa*.—This Orchid is so named from its gorgeous lip, which rivals even that of its near relative, *L. bella*. In shape it is much like that of *L. purpurata*, with a fine undulated margin. The color is a rich purple shaded to maroon, the pale yellow throat being streaked with purple. It is the result of intercrossing *Lalia purpurata* with *Cattleya Gigas*. In growth it much resembles its seed parent. The flower, appearing when the growth is only half matured, is large, of a delicate rose color and delightfully fragrant. This hybrid is as yet very rare, but like the majority of hybrids, is so free growing that it cannot fail to be moderately plentiful in a few years. A warm house, with plenty of water while in active growth, should be given it, with only sufficient water to keep the bulbs from shriveling during the winter, and like all other members of this genus the roots should be allowed to ramble at will.

Calogyne pandurata.—This curious Orchid is now in flower with us; the remarkable combination of black and green in the flowers being so rare render it a very interesting species.

The racemes bear eight to twelve pale green flowers about three inches across, the pandurate lip being irregularly streaked with black. It is an extremely free growing kind, often flowering twice in one year, and should be kept in a warm house all the time and liberally supplied with water. Baskets are best suited for it, filled with charcoal, and very little peat and moss, as it dislikes much material around its roots. It is a native of Borneo.

Kenwood, N. Y.

F. Goldring.

The Olive Tree.

THE Olive tree has in all ages been celebrated as a special gift of Heaven and as the emblem of peace and plenty. The wild and the cultivated Olive were mentioned in the earliest books written in the Hebrew language; it was one of the trees of the promised land of Canaan; and it was a branch of this tree which the dove sent out by Noah brought back into

the ark. The Olive was cultivated by the ancient Egyptians, and by the Greeks during several centuries before the Christian era. They brought it probably from the southern part of Asia Minor, where extensive forests of the wild Olive still exist; at least this is the opinion of M. Alphonse De Candolle, who, in his "*Origine des Plantes Cultivées*," has collected what is known of the early history of the Olive tree. Whatever region may claim the honor of being the first home of the Olive, it has now become widely distributed, primarily by man, and secondarily, and very considerably, no doubt, by the action of birds, being found in a more or less wild state from the drier regions of India through the Levant and the whole of the Mediterranean Basin to Portugal, Morocco, Madeira and the Canary Islands, where De Candolle doubtfully suggests it might have been carried by the Phœnicians.

The Olive (*Olea Europæa*) is a tree with a short, stout trunk, three to six feet, or even more, in diameter, divided a few feet from the ground into a number of large branches. It reaches, under favorable conditions, a height of forty or fifty feet. The bark, which is gray, is quite smooth on the branches and on the trunks of young trees, becoming rough and deeply cleft on old trees. The leaves are opposite, persistent, coriaceous, lanceolate-acuminate, less than an inch long on the wild plants, an inch and a half to two inches and a half long on some of the cultivated varieties. They are entire, dark green on the upper, and covered with a pale tomentum on the lower surface.

The small white flowers appear in axillary racemes equaling the leaves in length. The ovoid fruit of the wild plant hardly exceeds a red currant in size, while in some of the cultivated varieties it is considerably more than an inch long. Not more than one or two fruits develop then from each raceme, although in the case of the wild plant there are often six, or even more. The fruit, which in most of the best varieties is black when ripe, is covered with a smooth and shining skin, covering a soft green pulp filled with oil, and adhering to the hard, oval, oblong stone, pointed at both ends, and consisting usually of a single cell by abortion, and containing a single oily seed. As might have been expected in the case of a plant carefully cultivated for centuries in different countries, and by different races of men, many varieties of the Olive have been developed. No less than thirty-two such varieties are described systematically in the *Nouveau Duhamel* (v., p. 70, t. 25 to 32), where by far the best account of this tree, its economic uses and the methods employed for the preparation of its products, may be found.

The Olive flourishes in regions of small rainfall and in the most arid and barren soil, preferring that which is strongly impregnated with lime; but it will not support more than a few degrees of frost. Henry Laurens, a merchant of Charleston, in South Carolina, introduced the Olive into America about the year 1755. It is recorded that his trees bore fruit, "which was prepared and pickled to equal those imported." There are fine Olive trees on the southern end of Cumberland Island, off the Georgia coast, which bear fruit every year, and which must be nearly a century old. The climate, however, of the southern Gulf States, is not well suited to this tree, but on the Pacific coast in southern California, where it has grown for more than a century about some of the old Catholic missions, it is perfectly at home, and the cultivation of the Olive and the manufacture of Olive oil is one of the most promising of the younger California industries. The ancient Olive tree, which is illustrated upon page 284 of this issue, is of peculiar interest. It is a venerable and characteristic specimen of a tree which has few rivals in its usefulness to the human race, while individually it is one of the best known and most interesting trees in the world. It stands in the Garden of Gethsemane, at the base of the Mount of Olives, near Jerusalem, and is known as "The Tree of Agony," being popularly supposed to have witnessed the vigil of the Saviour.

Notes From the Arnold Arboretum.

"SHRUB," or Strawberry Bush, as *Calycanthus floridus* is commonly called, was once considered an essential feature of every old-fashioned garden; and its fragrant, dark brown flowers are perhaps known to as many people as those of any American shrub. There are, however, two other species of this genus with the same brown and fragrant flowers, which are not often cultivated, although they are harder than *C. fragrans*, which in severe winters is often killed down to the ground; and which flowers here early in June, or some time earlier than *C. laevigatus* and *C. glaucus*, which are now in bloom here. The former has large oval leaves, gradually acuminate at the apex, green on both sides, and only slightly rugose on the upper surface. In *C. glaucus* the leaves are narrower, and considerably larger than in the other species, pale below, with a few hairs along the mid-rib, and rugose on the upper surface. It has large flowers, and rigid, upright branches, which are sometimes six or eight feet high. The three species are natives of the Alleghany region from Virginia to Tennessee and Georgia, *C. laevigatus* extending as far north as southern Pennsylvania. Gardeners have too long neglected this last species, which is one of the most desirable of all hardy summer-flowering shrubs.

The shrubby Cinque-foil (*Potentilla fruticosa*) is one of the most widely distributed plants of the north temperate zone, being found through the northern portions of North America, in many parts of central and northern Europe, and through central and Russian Asia to Japan. It is a dwarf and branching shrub, two to three feet high, an inhabitant of low ground, and just now a conspicuous object, with its large, terminal, pale yellow flowers. The leaves are pinnate, with five to seven pairs of crowded, pale, silky leaflets. The short, flowering branches die down annually, but the base of the stems is truly woody. This has been found a useful plant in the Arboretum for forming masses of low shrubbery among trees, as it spreads rapidly from underground shoots, soon taking complete possession of the ground. It may, however, become, like *Genista tinctoria*, a dangerous weed if allowed to spread indiscriminately. It has indeed already overrun and utterly ruined considerable areas of mowing land in some parts of Berkshire County, in this State, and in Connecticut, where farmers find it almost impossible to eradicate this plant, and where it is known as "Hardhack." *Potentilla tridentata* is another woody species now in flower. It is found sparingly on the New England coast north of Cape Cod, on the coast of the Great Lakes and upon the summits of some of the high mountains of eastern North America. It is a low, spreading plant, only a few inches high, with handsome dark green and shining, palmate leaves, with three wedge-oblong divisions, coarsely three-toothed at the apex, and loose cymes of white flowers, half an inch across. This is an excellent plant for the margins of the rock-garden, as it remains a long time in flower, while its foliage is ornamental throughout the season.

Among the Leguminous plants now in flower, *Amorpha canescens*, the Lead Plant of the western prairies, is by far the handsomest and best worth notice. It is a spreading bush, two or three feet high, softly canescent and hoary throughout, with pinnate leaves, composed of fifteen to twenty-four pairs of minute leaflets and spikes of handsome bright blue flowers aggregated in a terminal sessile panicle. It is found on dry and sandy prairies from the Red River of the North to Texas, and its presence is popularly supposed to indicate the presence of lead-ore. It is an admirable and very hardy plant in cultivation, remaining in bloom during several weeks. The Lead Plant is rarely seen in gardens, however, although one of the first of our western plants known to botanists; and, although it was introduced into England as early as 1812, no figure of it was published until 1882, when it appeared in the *Botanical Magazine* (t. 6618). In the same volume of this Magazine appears the figure of another plant of the Pea Family, *Lespedeza bicolor*, now in flower. It is a native of north-eastern Asia from Manchuria and northern China and Japan, and is considered one of the most beautiful of the hardy shrubs introduced of late years into cultivation. *Lespedeza bicolor* is a slender, leafy shrub, four or five feet high, with slender, elongated and very graceful branches, three-foliolate leaves on long, slender petioles, with oblong, obovate leaflets, and axillary or rarely terminal drooping or sub-erect racemes of showy rose-colored flowers, an inch long, which are described as sometimes white or violet. This is a perfectly hardy plant and remains a long time in flower.

A Heath-like plant, *Dabaccia polifolia*, is in flower. It is a dwarf shrub with slender ascending branches one or two feet high, covered with small, narrow leaves, which are dark

green on the upper surface, and snowy white below, and large white, purple or rose-colored nodding flowers arranged in loose terminal racemes. "St. Dabeoc's Heath" is a native of south-western Europe, where it sometimes covers barren and gravelly wastes; and it is found in one or two stations in Ireland. Here it is a delicate and not very hardy plant requiring careful protection in winter and frequent renewal; and in spite of its beauty it can hardly be recommended for general cultivation in the climate of the eastern United States.

Rhamnus Frangula is a widely distributed European and North Asian plant, closely related to the Carolina Buckthorn of our Middle and Southern States. It is a tall, erect, unarmed shrub, growing to a height of eight or ten feet, with slender branches, handsome, glossy, pale green foliage, and small, axillary, yellow flowers, which are followed by rather conspicuous fruit, which is at first green, then bright red, and finally, when fully ripe, quite black. This plant continues to produce flowers in great profusion all summer long, and is covered during several months with flowers and with fruit in all stages of development, a peculiarity which, as well as its handsome foliage and entire hardiness, should give this Buckthorn a place in collections of deciduous shrubs. The wood is known in England as black dogwood, and in common with that of other species of the genus, has a considerable employment in the manufacture of gunpowder. Another plant which flowers here from the middle of July until the coming of frost, and which produces flowers and ripe fruit simultaneously, is the Chinese Lycium (*L. Chinense*), near relative of the well known and familiar Matrimony Vine of all old-fashioned gardens (*L. Europaum*). It has long, pendulous, or prostrate, armed branches, ten or twelve feet long, ovate-acute, dark green leaves, rather large pale purple flowers, and abundant, showy, bright scarlet, oval or oblong fruit, which is nearly an inch in length. This is a free growing and very hardy plant, admirably suited to train upon pillars or over trellises, and in every way more showy than the European Matrimony Vine.

Attention has been directed in an earlier issue of these notes to the great value of *Spiraea sorbifolia* as an ornamental plant; mention must now be made of a variety of that plant cultivated here under the name of *S. Tobolskia*, a name not referred to by Maximowicz in his monograph of *Spiraea*, and here applied to a plant probably of garden origin, and which only differs from *S. sorbifolia* in its much smaller panicles of flowers, and in the fact that it blooms from two to three weeks later. It is an equally hardy and desirable plant.

Aralia hispida, the Wild Elder of northern woods, may perhaps be considered a shrub, as the base of the stems are truly woody. It is a useful plant, largely grown in the Arboretum for covering the ground under trees and larger shrubs, for which purpose its habit of spreading rapidly by means of underground shoots well adapts it. It deserves notice, too, as a purely ornamental plant; the foliage is bold, the large, compound corymbs, composed of umbels of yellow flowers, make it conspicuous during the early weeks of July, and these are followed in autumn by showy, deep purple fruit.

Rosa setigera, the Michigan or Prairie Rose, is in flower. It is a widely distributed species, being found from Ontario and Wisconsin to Texas, South Carolina and Florida; and the only American Rose with climbing stems. It is the origin of the Queen of the Prairies, Baltimore Belle, and other double flowered climbing Roses, and in its single state is one of the most beautiful of our climbing plants, with broad and handsome foliage, and broad, flat corymbs of large flowers, which are sometimes nearly three inches across, and deep rose color when first expanded, but turning nearly white before fading. The Prairie Rose requires rich, deep soil and generous treatment to develop its greatest beauties, but when well grown it surpasses in beauty any of its progeny. 7.

July 21st.

The Forest.

The White Pine in Great Britain.

Mr. A. D. Webster, in a recent issue of *The Garden*, makes the following interesting statements in regard to the White Pine (*Pinus Strobus*) in England, called forth by Dr. Mayr's article upon this tree in the first number of GARDEN AND FOREST. They are all the more interesting because it is now very generally believed by English planters and nurserymen that this tree does not flourish in that country, where for some reason or other it is certainly much less frequently seen than on the continent of Europe.

"Next to the Corsican Pine (*P. Laricio*), I consider the White,

or Weymouth Pine, whether as an ornamental tree or for economic planting, the most valuable of the many Pines that have yet found their way into this country. The woods at Gwydyr Castle, in North Wales, and of many other places that I could name, amply substantiate Mr. Mayr's remarks as to the great value of the Weymouth Pine as a rapid timber-producer, and likewise as to its yielding under similar conditions to the Scotch Fir (*P. sylvestris*) a far greater amount of wood than that valuable and much-cherished tree. Let us look at these Gwydyr specimens and compare their rate of growth and bulk of timber with that of the Scotch Firs with which they are associated. Unfortunately, we do not know when these trees were planted, but one thing is pretty conclusive, that the whole wood, which crowns a shingly-soiled hill in the romantic and picturesque Conway Vale, was planted at or about the same time. The Weymouth Pines are now what might in truth be termed giant specimens, for I am under the mark in stating that the average height is fully 90 feet, and the girth of the flag-pole-like stems between eight feet and nine feet at a yard from the ground. Straight as ship masts describes well their appearance, they being smooth, nicely tapering, and destitute of branches for about three-fourths of their height. About the biggest Scotch Fir in the same wood is between seventy feet and eighty feet in height and with a bole fully seven feet in girth. Were we to touch on cubical contents, the differences in these two species of Pine would hardly be credited, and should any one feel inclined to doubt the genuineness of these statements, Mr. McIntyre, agent on this historic Old Welsh estate, will gladly vouch for their accuracy. The soil at Gwydyr is of a rocky, shingly nature, largely intermixed with the richest of vegetable refuse, fairly moist at all times, but without stagnant water. Situation not sheltered, yet not fully exposed. On another estate in Cambria I have measured specimens of the Weymouth Pine 57 feet in height, and with stems fully 50 inches in girth at a yard up, the trees being only thirty-one years old.

"At 1,200 feet above the level of the sea, at Strathkyle, in Ross-shire, the Weymouth, in conjunction with the Corsican and several other species, is doing well and making rapid progress. Then look at the Longleaf trees, which are fully ninety feet in height, not long drawn-up poles, but huge stems fully eight feet at breast high. I will say no more about how it succeeds in this country, for that it does well I am quite convinced.

"But some may ask, What about the timber? for plenty of foreign trees do fairly well in this country, and yet are valueless as timber-producers. I also know something of this, and am able to speak of it in terms of the highest praise.

"The timber, judging from the specimens I have had a chance of converting into boards, is of exceptional quality, being clean and very easily worked, of a desirable color, and, from experiments instituted five years ago, of a lasting nature."

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—I should be grateful for some advice as to the best plants and shrubs for the adornment of a small place at Falmouth, on the southern extremity of Cape Cod. Excepting a strip of the original ground, the land has been reclaimed from a salt marsh. The place seems too limited to justify the calling in of a professional landscape gardener, but I am inclined to spare no pains to make the planting effective. F.

Falmouth, Mass.

[Our correspondent, in common with nine hundred and ninety-nine persons in every one thousand, who want to treat a small piece of ground to the best advantage, makes the mistake of thinking that "the place seems too limited to call in the aid of the professional landscape gardener." A trained artist is needed to develop the possibilities of beauty, convenience and usefulness in a small as well as in a large piece of ground, and his knowledge and ingenuity may be more seriously taxed to make the most of a plot of ground containing a few hundred square feet than of a park of hundreds of acres. It is, of course, quite outside our editorial duties or aims to give specific instructions or advice about laying out or planting particular places. Such advice to be of any practical value must be based upon exact knowledge not only of local conditions and surroundings, but of the taste and wishes of the proprietor in regard to the character of his place and of the

amount of money he is able or willing to spend on it. It may be said generally, however, that this particular location, in common with many others on the shores of Cape Cod and at other points on the New England coast, is exceedingly exposed to high, cold winds, and that the soil is thin and light, and therefore seriously affected by droughts in all but exceptional seasons. Trees, even if they could be made to grow at all in a position so near the shore, would not be very satisfactory, and a lawn of close-cut turf had better not be attempted, as it would be pretty sure to be burned brown all summer long, and to be anything but an object of beauty. Much of the New England coast-region is unsuited for gardening, as that term is popularly understood, an art which finds expression in trim lawns and in beds of plants with colored foliage. The art of true gardening consists in making the most of natural conditions, and not in attempting the impossible or the unnatural for the sake of imitating the fashions of other countries. A large part of the region in question is covered with broad expanses of shrubbery composed of dwarf Plums and Viburnums, Huckleberries and Blueberries, Sumach and Wild Roses, Bayberry, Sweet Fern, Inkberry, Smilax and other dwarf shrubs, combined together in natural masses unsurpassed in their peculiar way in any other part of the world, and which are bright and fresh from the early days of spring until the autumn frosts make them blaze with new beauty. It is from among these native plants of New England that the material for the embellishment of the grounds of New England sea-shore homes should be selected, and the combinations of these plants which Nature makes are those which must be studied, if the best which these homes can be made to express in beauty is to be attained. Let any one compare a mass of the native shrubbery sweeping down to the shore on Mount Desert, or on the southern shores of Cape Cod, with the ordinary improved grounds which may be seen about the villas in these places, with brown lawns and sandy walks, with here and there a stunted Scotch Pine or a Cut-leaved Birch, and with beds half filled with forlorn Geraniums or dried-up Coleus, and he will see that large expenditures of money, when not directed by adequate knowledge and taste, may, in attempts at gardening, expel from a spot naturally beautiful all its native charms, without supplying anything in their place—either artistic or pleasing.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—I notice in your issue of June 27th that our company is credited with the introduction of that beautiful Japanese shrub, *Symplocos paniculatus*. Will you allow me to state that Mr. Thomas Hogg was the introducer, and we only the disseminators. Mr. Hogg brought from Japan so many beautiful things which have produced no profit, either to himself or to us, that all due credit should be accorded to him. I am the more anxious that this should be done here, since I have never been able to get the American introducers of new plants from Japan recognized in English periodicals. I sent a painting of the beautiful *Magnolia parviflora* to an English paper, with a careful description taken from a flower before me, and naming Mr. Hogg as the introducer. This description was ignored, a very meagre note took its place; and while we were recognized as the senders of the painting, Mr. Hogg was entirely ignored as the introducer. This experience was repeated in the case of the Hydrangea named for him, and in the case of the Japan Maples, the whole collection of which was sent to us by Mr. Hogg. I may add Dr. Hall was treated in the same way.

Flushing, L. I.

Sam'l B. Parsons.

To the Editor of GARDEN AND FOREST:

Sir.—Throughout Minnesota and Dakota, along the north side of railway embankments, the south side of railway cuts, and on breakings that have lain a year or more, little trees come up and grow until weeds and grass form fuel enough for a fire to kill them.

On the prairies and plains these seedlings are not abundant, but still they do come up.

I believe that if fires could be kept from running over the land, with occasional tree claims to furnish plenty of seed, trees and shrubs would soon come in and improve this country very much.

Mandan, Dakota, July 13th.

H. B. A.

To the Editor of GARDEN AND FOREST:

Sir.—Reference was made in GARDEN AND FOREST, July 18th, to Locust and Elder flowers being used in Europe as delicacies for the table. Of the Locust I cannot speak from experience, but I can of the Elder. The flowers of the common Elder, stripped from the stems, are excellent ingredients in waffles or "flannel" cakes. These flowers add a delicious flavor to the cakes and are considered healthful. People who are not quite æsthetic enough to live on the perfume of Lilies, may find in Elder blooms a seasonable diet.

H. V. A.

Palmyra, N. J.

Periodical Literature.

In the *Popular Science Monthly* for July is an article by Mr. Grant Allen, even more attractive than the one on "The Bread-fruit of the Desert" to which we recently called our readers' attention. This time his subject is "Gourds and Bottles" while his place of observation is again the north coast of Africa. The great family of Gourds (*Cucurbitaceæ*) is known to us in this country through our cultivated Melons, Pumpkins and Cucumbers, and through a few wild species none of which produces a fruit of any great size. But the fruit of the true Gourds of which Mr. Allen writes, is familiar not only through imported dried specimens made to serve as bottles, but through the innumerable pottery and porcelain imitations of these bottles which are so characteristic of the art of every southern and eastern nation. Part of Mr. Allen's article is taken up with a discussion of the way in which, after having once learned to make vessels of the dried Gourds themselves, men learned, first to strengthen them with a coating of baked clay and then to use the clay by itself while keeping the original shapes; and in showing how all the varieties of Gourd-like shapes we know may have sprung from direct imitation, since the Gourd naturally assumes many diverse forms and may be made to assume a still greater diversity by being constricted during its growth. But much space is also given to a description of the habits and manners of growth of the plants, and of the different ways by which cross-fertilization through insect agency is achieved in different species.

In the same number of the *Popular Science Monthly* Professor Byron D. Halsted writes of "Botany as it May be Taught" in a manner so sensible and suggestive that his article ought to attract the attention of all teachers and students in this branch of knowledge. Its value is vastly increased, of course, by the fact that he explains methods which are not merely theoretical, but which he has successfully put in practice with large classes of young men and women in the State Agricultural College of Iowa. A third article which may be noted in this magazine is Dr. Manly Miles's on "Lines of Progress in Agriculture," while among the minor contributions is an interesting one on "Flower Farming" for the production of essences in the south of France, and another on the manufacture of India-paper from the fibres of Hemp, Mulberry-bark and similar substances.

Notes.

The death is announced of Giuseppe Inzenga, a well known authority on Fungi, who was Professor at the University of Palermo.

Mr. David Allan, gardener to R. M. Pratt, Esq., Watertown, Mass., has a number of fine plants of the showy *Disa grandiflora* in full bloom.

A single plant of *Ampelopsis tricuspidata*, on Camden Street, Boston, covers completely the front of a three-story block of houses for a distance of one hundred and twenty-five feet.

From Newport are now coming Hydrangeas with blue flowers and Sweet Peas of the Butterfly variety with lilac edgings. These are now extensively used by florists of this city in choice designs.

In the absence of White Carnations, Asters are largely used by the Boston florists, during the summer months, in making up designs. One large grower averages, at the present time, three thousand Aster-blooms a day.

Mr. John N. May, the well-known Rose-grower of Summit, New Jersey, is not prepossessed in favor of the Rose, Mrs. John Laing, owing to the muddy color of its blooms after they have been cut twelve hours or so. Nevertheless, he is devoting his largest house to its cultivation, and will give it a fair trial.

A dozen plants of the new *Cypripedium bellatulum*, recently described in this journal, were exhibited by the Messrs. Low at a late London flower show. Every one of them bristled with flowers, tending to prove the floriferous quality claimed for the plant by its introducer.

A statue is to be erected to the memory of the French botanist, Planchon, in the town of Ganges, not far from Montpellier, and in the centre of a Grape growing region, once devastated by the Phylloxera, to whose investigation and to the study of the Vine he largely devoted the last years of his useful life.

The Royal Horticultural Society of London will give no more certificates for new varieties of tuberous Begonias. The committee holds that something like perfection has been reached in this direction, and that hereafter not an individual variety, but the particular strain of varieties, should be commended.

The remarkable specimen of the new variety of *Cattleya Gigas*, described in another column, has been added to the rich collection of F. L. Ames, Esq. Although it had been in bloom quite three weeks when it was sent to North Easton, the flowers were in perfect condition when it arrived at its new home.

Six thousand bushels is the average annual crop of pears yielded by three of the larger orchards in Essex County, New Jersey. This year the crop will hardly reach two hundred bushels. The failure is attributed, by some fruit-growers, to unfavorable weather when the trees were in bloom, which prevented the proper fertilization of the ovule.

Some idea of the dependence of Great Britain upon French gardeners will be gained from the fact, published in the *Journal of Horticulture*, that during the year 1885 there were shipped to England from the little port of Roscoff, in Brittany, 11,107 tons of Potatoes; 4,060 tons of Onions; 4,000 tons of Cauliflowers; 1,800 tons of Artichokes.

Probably the largest specimen of *Todea barbara*, a Fern with a thick, woody stem, peculiar to Cape Colony, Australia and New Zealand, ever sent to Europe, has recently been received at the Jardin des Plantes in Paris. It weighs nearly 600 pounds, and the stem, from which spring sixty clusters of fronds, is four feet high, six feet long, and nearly four feet wide. It is said to be in good condition.

It is claimed that the first exhibition devoted exclusively to the Chrysanthemum was held at Toulouse, and that more than 6,400 flowering specimens of this popular plant were collected at the exhibition which took place in that city three years ago. An exhibition of these plants, under the auspices of the *Société d'Horticulture de la Haute-Garonne*, will be held there this year from the 15th to the 18th of November.

In the Grass and Forage Garden at the Storrs' School Agricultural Experiment Station, Connecticut, are growing seventy-five species and varieties of grasses, legumes and other fodder plants; besides this, a number of sods have been set out. The farmers of the State are invited to send samples of sod from old meadows and pastures, six inches square, with a view to test the different grasses from all parts of the State.

A letter to a daily paper appealing for contributions to the New York Flower Mission, the work of which was recently described in our columns, states that on a single day last month 11,425 bunches of flowers were distributed among the poor and sick. Another centre for the reception and distribution of flowers has been opened at Police Headquarters, 303 Mulberry Street. Wherever gifts may be sent it is desirable that they should be enclosed in old boxes or baskets which need not be returned. It is hardly necessary to add that fruits will be as welcome as flowers.

On the day of the late Emperor Frederick's funeral (June 18th), the hundredth anniversary of the birth of the botanist Karl Sigismund Kunth was celebrated in the Jerusalem Church-yard at Berlin by the Botanical Association of the Province of Brandenburg. Kunth's reputation rests upon his labors in describing the plants collected by Alexander von Humboldt and Aimé Bonpland, upon the examination of the Passalagua collection of vegetable remains from Egyptian tombs, and especially upon his classical "*Enumeratio Plantarum*." Kunth was well known in his life-time as a student of garden plants and for many years was Professor and Vice-Director at the Botanical Garden in Berlin. His death occurred in the year 1850.

The *Revue Horticole* calls attention to the fact that the formal arrangement of plants has been abandoned in the flower-beds seen this year in the city of Paris. Such beds are now usually surrounded with a formal row of plants of one variety; the remainder, except in the case where the bed is divided into compartments by means of lines of color, being entirely filled with various combinations of flowering or foliage plants, grouped naturally and without formal arrangement. Some of the combinations of the plants, made by the Parisian gardeners, are far more attractive than the formal ribbon-border style of arrangement so universal in the United States and in England.

A correspondent of a San Francisco paper in Paarl, in Cape Colony, says, that the Colony annually exports about 50,000 cases of Everlasting Flowers, worth some twenty dollars a case, half of which go direct to New York and Boston. The flowers are gathered by the Kaffirs, chiefly in the Drakenstein Mountains, about fifty miles from Cape Town, and are brought to the country storekeepers, who dry them in long sheds, from the roof of which they are suspended in bunches in order that the warm wind may pass freely among them. The Kaffirs go out in families in the gathering season, and the women and children do most of the work, which is by no means easy, as they must follow unfrequented paths, and their half-naked bodies are sadly bruised by the stones and thorny bushes among which the plants are found. A certain amount of actual danger is also involved in the work, as life is often risked to obtain choice specimens growing on the verge of precipices.

A telegraph wire is the last thing one would expect to support vegetation of any kind; yet a traveler in Brazil writes to a German horticultural journal describing a crop of Mistletoe which he found clothing the wires not far from Rio Janeiro. At a distance, he says, the wires appeared fringed with what he supposed were the leavings of a recent flood. But a perception of their height soon removed this idea, and upon examination the fringe proved to be composed of thousands of little Mistletoes, firmly fixed to the wires from which they depended. Many species of this family flourish in Brazil, and some of them, called "Bird-weeds" by the people, thickly infest fruit-trees and other cultivated plants and bear large berries which are greedily devoured by birds. These seeds are deposited on the telegraph wires in the birds' droppings and quickly take root, and although the plants perish, naturally, before very long, they are succeeded by others, and the curious Mistletoe fringe is perpetuated.

A private letter from the chairman of the California Forestry Commission speaks encouragingly of the work already accomplished by the commission. Important additions to the forest map have been completed during the present season; the nurseries established a few months ago by the commission, under the charge of Mr. Thomas H. Douglas, already contain 300,000 young forest trees for distribution through the State, while lands valued at from \$60,000 to \$80,000 have been presented to the commissioners by private parties to enable them to inaugurate and carry on experiments in forest planting. Satisfactory progress has been made also in stopping the stealing of timber from Government and State lands, and the setting of forest fires, which have long threatened the very existence of the California mountain forests. The efforts of the commission have had, however, the result of forcing lumbermen and speculators to take up Government timber lands, and the sales of such lands during the last year are unprecedented in amount.

At a recent Saturday exhibition (July 28th) of the Massachusetts Horticultural Society, a collection of Achimenes shown by Mr. N. T. Kidder, of Milton, attracted much attention. Better grown, cleaner and better flowered plants have probably never been seen in this country. The collection contained specimens of Mauve Queen, with very large flowers of great substance, and the handsomest variety shown, although not so covered with flowers down to the base of the stems as some others, Carl Schurz, Grandiflora, Longiflora, Bronzoni, Dazzle, Admiration and Eclipse. Achimenes, although they are less commonly seen here than they were a few years ago, are excellent plants for the summer decoration of green-houses and conservatories. To the same exhibition a splendid plant of *Sobralia macrantha*, one of the noblest of terrestrial Orchids, was sent from the garden of Mr. John L. Gardner. It was more than seven feet high, with a dozen and a half of its lovely, great, purple, aromatic flowers expanded. This is one of the few Orchids which combines stately habit, handsome and abundant foliage, and showy flowers.

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Work for the Experiment Stations.

PLANT breeding bears the same relation to horticulture that stock breeding does to animal husbandry. The advance of modern horticulture is most marked in the increased number and improved quality of varieties, and in this direction lies the brightest hope of future progress. The study of soils is the task of the agricultural chemist. The study of plant diseases falls naturally to the botanist, and that of insects to the entomologist. But the study of plant development is the legitimate field of the horticulturist, and here he may expect his highest achievement.

And yet the systematic pursuit of plant breeding is scarcely compatible with practical horticulture. Its results are too slow, too costly and too uncertain to offer pecuniary reward, yet the labor itself requires a high degree of scientific knowledge and skill. It is just here that the Experiment Stations should come to our aid. They should develop a new class of specialists, whose entire time should be devoted to the work of plant improvement. This labor can undoubtedly be best advanced by judicious cross-fertilization, and the art of crossing should be regarded as the first requisite in this new profession. The desultory and unsystematic, and even haphazard, efforts that have been made in this field of experiment in the past, have yielded such truly valuable results that we are abundantly justified in hoping for greater results, from the pursuit of cross-fertilization in a thoroughly scientific manner.

Many are now looking to our Experiment Stations for achievements in this very field, and indeed some success has already been attained in it. But the vast amount of time required in the work of cross-breeding, when done systematically, makes it impossible for the regular horticulturist of the station to accomplish much in this direction. Those who have not attempted it have little idea how tedious and trying is the actual work in this direction. A half day's patient labor will often yield but a score or two of pollenized flowers. Many of these may fail. But with those which live the labor has but just begun. The fruits, which contain the coveted seeds, must be carefully

watched throughout the season in order that they may not be lost. The following year the plants must be grown, their characters noted and selections made. It will often happen that, after a generation or two, the progeny of a single cross will have become so extensive and will offer so many promising lines for selection, that it will prove no small undertaking to keep informed of its current history, and the horticulturist who has much other experimental work on hand will be tempted to give up in despair.

A moment's thought will satisfy any one that a specialist at cross-fertilization need never lack for work—at least not after the first season. Different plants are in blossom at various times from early spring until autumn. Then there is the growing of the crossed plants, with the careful study of their characters, that those worthy of further trial may be selected. In order to possess the ability to make such selections wisely, the workman must be thoroughly conversant with existing varieties. This would require much patient observation and study. The winter season could be profitably spent in writing out the results and studying the records of what others have accomplished in the same field. With a green-house at command, much could be done to supplement the summer's work.

It is to be hoped that the directors of some of our Experiment Stations will appreciate this opportunity that lies open in the department of horticulture, and will make provision for a specialist of the kind here pointed out. But the mistake must not be made of supposing that any man who chooses to apply is competent for the position. On the contrary, it is a labor in which few men can be expected to succeed. It demands a considerable knowledge of botany, a thorough knowledge of horticultural varieties, and the ability to read accurately French and German literature. But most important of all, it requires a man who has a genuine love for the work, without which success in experimentation is quite impossible.

Notes from a French Garden.

The following extracts from a personal letter lately received by the editor of this journal from M. Charles Naudin, director of the Gardens of the Villa Thuret in the south of France, are of general interest:

"We have had a very severe winter in Provence; the cold has lasted much later in the spring than usual, and many plants have suffered in consequence; but with the month of May the heat returned, and many young trees, Eucalypti and others, which I feared were entirely dead, now show signs of life again. Such severe tests have their uses, as they establish the hardiness of plants, which otherwise might not have been thought capable of supporting our climate. You will be glad to hear, perhaps, that the gigantic *Yucca filifera** flowered here profusely during the month of May. Its enormous panicle of flowers, more than three feet long, descending in a white cascade from the top of the plant, was the admiration of all who saw it. We have five well-grown specimens of this remarkable *Yucca* in the garden here, and among them there are one or two which flower every year. *Yucca Treculiana* and *Y. Draconis*, which almost rival it in size and beauty, also flower here every year.

"You sent me a few years ago seeds of *Heteromeles arbutifolia*†. They grew well and the young trees are now in flower. It is a valuable addition to our southern gardens. The *Olneya Tesota*, the seed of which was sown a couple of months ago, are doing well, too. I have sent the seeds of this interesting tree to a large number of gardeners in southern France and in Algeria.

"*Nothoscordum fragrans*, an American plant, is now naturalized in the entire Mediterranean Basin; it abounds in this garden, where it propagates itself; and what is still more remarkable, this plant is now completely naturalized in Mauritius and in the Island of Bourbon, whence bulbs have been sent me under the name of *Milla Borbonica*. It is used there as a vegetable.

"I have lately received from Bolivia seeds and tubers of a

* See GARDEN AND FOREST, pages 78 and 79, Figures 13 and 14.

† [A small evergreen tree of the Rose Family peculiar to the California coast, where, in the autumn and winter months, when covered with its handsome red fruit, it makes a conspicuous object.—Ed.]

new species (?) or variety (?) of Potato, under the name of *Solanum Pureka*. The tubers, which are said to possess an excellent flavor, are smaller than those of the ordinary cultivated Potato and their shape is peculiar. The plant barely differs, however, in habit and in its flowers from *Solanum tuberosum*. Is it a variety or a species? And, after all, what is a species for the botanist of to-day? The conception of specific limitation becomes confused in proportion as the knowledge of natural science increases. And this remark is applicable certainly to the different plants of the genus *Bahmeria* (China Grass, Ramie). We cultivate here, and both are now in flower, *B. tenacissima* and *B. nivea*; while there is another species (?) here quite unlike either of them. And I learn, by a letter just received from the botanist Balanga, now in Tonquin, that there are in that country several species of *Bahmeria*, some cultivated and others wild, from which the fibre is extracted. I believe that there are still important discoveries to make in this genus of *Urticaceae*.

"While there are some North American trees which adapt themselves perfectly to our Mediterranean climate, there are others which cannot be made to grow here. This, for example, is the case with *Carya myristicaformis*, of which you sent me nuts four or five years ago. The plants, which are not three feet high yet, are alive, but they grow with a slowness which is discouraging, and the leaves are more yellow than green. This perhaps is the effect of the soil rather than of the climate. Some of the other Hickories do a little better here.

"Our success with a Bolivian plant, *Mutisia viciaefolia*, which is considered a specific against pulmonary complaints, is certainly astonishing. This curious Composite—which might, judged by its foliage, be mistaken for one of the Pea Family—has proved perfectly hardy here, passing the winter without protection and flowering freely, and, apart from its supposed economic properties, it is an interesting ornamental plant. It will certainly succeed in your Southern States—Virginia, Carolina, Florida, etc.—and if really a remedy for consumption, its introduction there will be a matter of great importance.

"I am trying now, for the third time, to cultivate *Lepedeza striata*, which heretofore has not succeeded in Provence. It is probable that the climate here is too dry and too hot for it. I have sent seeds to Brittany and into the south-west of France, where perhaps this most interesting forage plant will grow more successfully than it does here.

"You are wise indeed to protest in your journal against the destruction of forests. If the American people, so ready to destroy their trees, could only see the consequences of forest destruction in southern Europe and in northern Africa—the ground scorched by the sun in summer, overflowed and swept away by torrents in winter, the excessive droughts which destroy all crops, the drying up of streams, the vast and expensive public works necessary to provide means for artificial irrigation, etc., etc., they would understand perhaps better than they do now why nations should preserve their forests, and especially those which cover mountains. Forests are needed in the valleys, too, to furnish lumber and firewood, without which a civilized people cannot exist."

The fact that the tops of Pine and Spruce trees cut in the Maine woods can be utilized in the manufacture of paper-pulp has more than local or mere industrial significance. The fires which do such immense injury in the Coniferous forests of this country can generally be traced to the tops and branches of trees, left by the lumbermen behind them in the woods. These by the middle of the following summer become perfectly dry and afford the very best material to start a great fire with, in case a careless hunter or tramp or berry-picker drops a lighted match or a spark from his pipe into it. In Europe there is a demand always for such minor products of the forest; and the material itself pays for the cost of gathering up every part of the tree which the lumberman cannot make use of, to say nothing of the increased safety this gives to the forest, and to the priceless surface coating of decaying vegetable mould which fires consume. No one in this country has wanted the tops and branches of trees, and lumbermen have preferred to take the chance of almost inevitable fire rather than pay the cost of having the woods cleaned up behind their operations. The upper part of the main trunk as well as all the branches and chips and all

unsound logs, the whole amounting generally to a third of the whole bulk of the tree, has been left in the woods to burn or rot; while in the case of Hemlock it is only within a comparatively recent time that any use of the tree except the bark has paid. In some districts in Maine now, however, the tops and large branches of the trees are gathered; and the wood, from which the knots and sapwood is first removed, is thoroughly steamed to extract all resinous matter, and then ground into dry pulp. If it is profitable in Maine to do this, it will doubtless prove profitable in other parts of the country; and one of the principal causes of forest fires may perhaps in time be eliminated in this way.

The Pines in July.

BEAUTIFUL flowering plants greet us at every step in our midsummer walks through the damp Pine-barrens. Conspicuous among the shrubs is the Sweet Pepperbush (*Clethra alnifolia*), now covered with lovely racemes of white, scented flowers, and with it the White Swamp Honeysuckle (*Azalea viscosa*) is exhaling and blending its fine odor. The flowers of the Swamp Honeysuckle are in large, showy clusters. Some plants bear pure white flowers, while others have pink or pale rose-colored blossoms. Wild Roses still bloom among the other shrubs, and the Button-bush (*Cephalanthus occidentalis*) is too pretty to be passed by without mention. Its round head of fragrant white flowers and its foliage are both attractive, and I never pass it without adding some of its sprays to my wild bouquet.

The ponds are more beautiful this month than last. Their edges are fringed with a tall growth of rushes, sedges and grasses, which sway in the wind, revealing the flowers that hide among them. Charming Orchids are here, more beautiful than many exotic rarities which cost a king's ransom. The Grass Pink (*Calopogon pulchellus*), with a scape of from six to twelve showy, rose-purple flowers, is in the height of its beauty, as is also its ever-present companion, *Pogonia Ophioglossoides*, with paler rose-colored, sweet scented flowers. And the White-fringed Orchis (*Habenaria blephariglottis*), with its many-flowered spike of pure white flowers and cut-fringed petals, is surpassingly lovely. The Yellow-fringed Orchis (*H. ciliaris*), with bright, yellow-orange flowers, is handsome, too, and each makes the other appear to the best advantage. And the smaller Yellow-fringed Orchis (*H. cristata*) must not be left unnoticed and overshadowed by its more pretentious relatives. It is not so abundant as the others, and must be sought for, which makes it all the more charming when found.

All of these Orchids, with many other native species, will grow and thrive finely in a tub sunk in the ground, where they might be fit companions to the Water Lilies lately described in an editorial in GARDEN AND FOREST. They will grow in any common garden soil, but where it is practicable it is better to fill the tank or tub with the soil from their native haunts, and also to cover the surface of the ground with sphagnum, to give it a natural bog appearance; and the sphagnum will act as a barometer, telling when to apply water.

One is surprised to find how many of these plants can be grown in a small space. We can have a constant succession of charming flowers from early spring until late autumn, with no care after they are once established but to add water in times of drought.

The Cardinal flower (*Lobelia cardinalis*) is just coming into bloom, and the Pickerel-weed (*Pontederia cordata*) holds up its spike of blue flowers in striking contrast with the gorgeous scarlet of the Lobelia. Everywhere under foot are masses of bright, orange-colored flowers of *Polygala lutea*. And the large, showy, pink-purple flowers of Meadow Beauty (*Rhexia Virginica*) mingle with it. A little in the background stands our superb Lily (*Lilium superbum*), which lifts its magnificent pyramid of nodding

flowers far above my head. Many of the flowers are beyond my reach, but I can look up into the bell, and see the dark purple spots on its lining of orange. No more stately Lily grows in all the world. A little beyond, on dry, sandy soil, is the Orange-red Lily (*L. Philadelphiaicum*), with erect, bell-shaped, reddish flowers, also spotted with purple, while an exuberance of the glowing Butterfly-weed (*Asclepias tuberosa*) fairly illuminates the landscape. This plant is well named, for myriads of butterflies are contending for its sweets.

The Wild Bean (*Apios tuberosa*) clambers everywhere, covered with dense racemes of fragrant, pea-shaped flowers, while just beneath it trail the yellow clusters of the Pencil flower (*Stylosanthes elator*). Here, too, are seen the great purple flowers of the Beach Pea (*Lathyrus maritimus*), and the dense clusters of yellowish-white and pink flowers of the Goat's Rue (*Tephrosia Virginica*), creeping modestly about decayed stumps.

The little Partridge-berry (*Mitchella repens*) carpets the ground, and its delicate and fragrant flowers of white and pink are strung along in pairs among the glossy little leaves. And here blooms the Spotted Wintergreen (*Chimaphila maculata*), one of the most beautiful of modest wood-plants, with nodding flowers of waxy pink, while near by, beneath a thick growth of Chestnut Oaks, are great clusters of its pallid relative, the parasitic Indian Pipe (*Monotropa uniflora*).

And now I detect the anise-scent from the crushed leaves of the sweet Golden-Rod before I see the flower, which has already opened. It is the advance guard of autumn, announcing the approach of that tidal-wave of blue and gold that will cover all the waste places as with a sea, and make them more glorious in the dying year than they were in all the time of spring promise and summer ripeness.

Vineland, N. J.

Mary Treat.

Foreign Correspondence.

London Letter.

Stropholirion Californicum of Torrey is the most remarkable among the many hardy bulbous plants at present in bloom in the Royal Gardens at Kew. It is singular in growth, unique so far as I know as a bulbous plant possessing a tall twining flower scape. The Kew plant has now several scapes fully five feet high, and perhaps six feet when untwisted, and each is surmounted by a dense umbel of delicate rose-pink flowers of a peculiar shape, the perianth segments being saccate. There are no leaves to the plant now, so that the naked scapes have a strange appearance, twisting from left to right round stout stakes. It is perfectly hardy at Kew in light soil and seems to get stronger every year. It is not known much in a general way, though it is quite a "commercial" plant, as some of the nurserymen here term showy plants. It is nearly allied to *Brodiaea* and *Brevoortia*.

Heuchera sanguinea is another western plant (introduced five or six years ago) that has proved itself a hardy herbaceous plant of the highest value. Many are of my opinion that it is the finest hardy plant brought to this country for many years, because it has so many good points, being hardy beyond a doubt, rapid and sturdy of growth, not fastidious as to soil or situation, neat in growth and bearing a prodigious crop of the loveliest flowers. They are borne in paniculate spikes about a foot high, are small and bell shaped, and droop on slender stalks in a most graceful way. The color is a deep crimson coral, totally unlike any other flower of a similar class, and a color, moreover, which everybody admires, and especially for cut sprays and for vases. The foliage, like the rest of the *Heucheras*, is evergreen, of rounded outline, with shallow lobes. It is a native of northern Mexico, and was introduced in commerce by Mr. T. S. Ware, of Tottenham. I have just seen a large specimen of

it in a border, carrying quite a sheaf of bloom. It blooms for several weeks, beginning about the middle of June.

Romneya Coulteri.—I have just seen this glorious Californian Poppywort in flower in Kew gardens. It may, for aught I know, be a common plant with you, but with us it is one of the rarest and choicest border flowers we have. One need not be an enthusiast to admire its great satiny blossoms of snowy whiteness and adorned in the middle with a tuft of stamens like a golden tassel. There is such delightful harmony, too, between the glaucous and much divided leafage and the blooms. It has the reputation of being a "miffy" plant—that is, it wants much attention and then often does not reward us by behaving well. The best specimen I have seen of it was in a lady's garden in Surrey. This was four feet high and a yard across, bore many stems and many flowers, and so enraptured was I that I sat by the plant an hour. It is assuredly worthy of the stir that is made about it, and who could begrudge time and labor to bring such a fine flower to perfection? It would be wrong to call it a hardy plant; it is not strictly so, and I put it in the same category as *Carpenteria*, *Calochortus* and many other lovely plants from California.

The Blue Poppy of the Himalayas (*Meconopsis Wallichii*) is now the pride of many a hardy-flower lover. It has just commenced to unfold its stately pyramid of buds and will continue to bloom for several weeks to come. Among hardy plants this Poppy is unique in the color of its flowers, and no plant resembles its habit of growth. It is generally described as a perennial, but really it is but biennial in duration, as it develops its growth—a tuft of deeply pinnatifid leaves—the first season from seed, flowers the next, and then dies. The leaves are a foot or more long, of a pale green and densely covered with tawny brown hairs. The flower stem rises from three feet to even seven feet in height, according to the strength of the plant; it is generally much branched, and is loaded with a multitude of blossoms and buds. The open flowers are bell-shaped, two inches across, and of a peculiar shade of pale blue. The buds begin to open from the top downwards, the contrary being usually the case in plants. It is a perfectly hardy plant, but requires a spot sheltered from cold winds. The pale blue is the original color of the flower, but there is a variety with deep brownish-purple flowers named var. *fusco-purpurea*, and of this Mr. G. F. Wilson, the celebrated Lily grower in Surrey, had some fine blooms the other day. Mr. Wilson showed me at the same time a stem of the Caucasian Lily (*Lilium Szovitsianum*) measuring fully seven feet high, with a dozen of its handsome, primrose yellow flowers. There was also a stem of *L. Hansonii*, six feet high, carrying eleven flowers. These are average examples of the growth which Mr. Wilson gets in his Lilies, which are the admiration of all who see them.

The Sweet Pepperbush (*Clethra alnifolia*) in pots.—I fancy I omitted to mention in my last letter the fine display made by Messrs. Veitch of this American shrub at the last meeting of the Royal Horticultural Society. A dozen or more compact little pot bushes, averaging about two feet high and as much through, and each carrying a large number of flower spikes, were shown. The elegance of the bushes, their feathery spikes of white flowers, deliciously scented, attracted attention, and though such an old shrub in English gardens, I will say common shrub, it was known by comparatively few. Few persons have seen it grown as a pot plant. If it could be forced into bloom early in the season it would be charming for the green-house, as is also the Fringe tree, *Chionanthus Virginica*, which Messrs. Veitch showed in flower in pots in March.

Very interesting is the new race of late-blooming Azaleas derived from the lovely *A. occidentalis* of California, which for many years was only to be found in choice collections here. The development of these hybrids is due to Mr. Anthony Waterer, at whose nurseries I lately saw these beautiful and promising plants in bloom. The typical *A.*

occidentalis does not differ widely from other American Azaleas, such as *A. calendulacea* or *A. nudiflora*. It is deciduous, with bright green, shining foliage, and grows here from four to six feet high. The flowers are either pure white or stained with a ruddy tinge on their exteriors, while there is always a conspicuous yellow blotch on the upper petal. The fragrance is powerful and delicious. Usually the flower cluster is small and loose, and this is one of the defects Mr. Waterer has endeavored to remedy by intercrossing with his finest trussed Azaleas. The many new hybrids thus obtained have the characteristic features of *A. occidentalis*, with the large trusses and large and finely formed flowers of the fine early sorts. Moreover, some beautiful varieties have been obtained at Knap Hill by intercrossing *Azalea mollis* and *A. occidentalis*. At one time it was thought that such a cross would be impossible, but Mr. Waterer now has plants with the peculiar characters of both species, in foliage and growth as well as in flower. One variety, to be known in future as Mrs. F. L. Ames, has large trusses of snow-white flowers, with nothing to mar their purity save a delicate stain of yellow on the upper petal. The foliage is intermediate between that of the parents, while it loses nothing in fragrance. As the race is yet quite young, only the exceptionally fine sorts have been named and there are great expectations from the multitudes of unnamed seedlings. At the present time (July 7th) the Californian Azalea is flowering in perfection in Kew gardens, while all other sorts have been out of bloom for ten days or a fortnight. To prolong the Azalea flower season, which is unfortunately much too short, is one of the worthiest efforts of hybridists, who should be encouraged by such good results to proceed further.

A new Passion-flower, a fine hybrid, is now blooming in the Royal Gardens, Kew. It is a cross raised by Mr. Watson, the Assistant Curator, between the hardy *Passiflora carulea* and the Brazilian *P. Raddiana*. The flowers are larger than those of *P. Raddiana*, the petals and fringe longer, while the color is carmine, suffused with blue, which, though perhaps not so bright and pleasing as it is in the parent, is a lovely color. The growth is very graceful, the long shoots hanging down four or five feet like a curtain, and each thickly wreathed with flowers. It is likely to prove much hardier than *P. Raddiana*, which requires a stove, and as we have so few green-house Passion-flowers this novelty is a great addition. It is proposed to call it *Passiflora Kewensis*, so as to hereafter fix its birthplace.

Very beautiful is the new Californian shrub, *Carpenteria Californica*, against one of the old walls at Kew. It is one of the loveliest of all open-air shrubs, as no other bears such large, snowy flowers. The saucer-shaped flowers are quite three inches across, and the tuft of lemon-yellow stamens serves to emphasize the purity of petals. As many as a dozen buds and open flowers are on some of the branches. They are borne quite at the tip, and in moonshine shine like satin. It is a pity that this shrub is not hardy enough for culture as a bush in England generally, though in the Isle of Wight and the Devonshire coast it does not need the protection of a wall.

London, July 14th.

W. Goldring.

New or Little Known Plants.

Rhododendron brachycarpum.

THIS handsome and exceedingly hardy species of *Rhododendron* is a native of Japan, whence it was brought to this country with many other new plants by Mr. F. Gordon Dexter, of Boston, in the neighborhood of which city it has since found a place in Mr. Parkman's garden, without, however, having attracted the attention which its hardiness and the peculiar color of its flowers seem to justify.

*Rhododendron brachycarpum** is a tall, wide branching

* *R. brachycarpum*, G. Don, *Gen. Syst.*, iii. 843.—DC. *Prod.*, vii. 2, 723.—Gray, *Men. Acad. Arts and Sci.*, vi. 400.—Maximowicz, *Rhododendra Asiae Orientalis*, 22.—Franchet and Savatier, *Enum. Pl. Jap.*, i. 288.

shrub, which, in its native country, sometimes attains the height of ten feet. It has the habit and general appearance of the North American *R. Catawbiense*; the leaves, however, are terminated with a stout, short mucro, and are covered on the under surface with a fine, silky, rufous tomentum, while the flowers are pale yellow or cream color, the upper lobes of the corolla handsomely spotted with green on their inner surface. It is widely distributed in the mountain regions of northern and central Japan, covering vast tracts on Mt. Fudsi-yama above the limits of tree-growth, just as *R. Catawbiense* covers the upper treeless slopes of Roan Mountain in North Carolina.

Rhododendron brachycarpum is hardier in this climate than the Carolina plant or than many of the hybrids derived from that species, especially those with light colored flowers; its foliage is not burned or injured during the most severe winters even, and its flower-buds never suffer. These facts suggest the possibility of creating a new race of garden *Rhododendrons* with light colored flowers and hardier foliage than any we now possess, by mingling the blood of this Japanese species with that of some of the *Catawbiense* varieties. C. S. S.

Cultural Department.

The Fruit Garden.

GOOSEBERRIES of foreign origin do not thrive in this country generally, and of native varieties, the Cluster or American Seedling and Houghton (Red), the difference between them being very slight, were almost absolutely successful till the introduction of the Downing, Mountain, and Smith's Improved. These being much larger than the preceding kinds and quite as free from mildew, rapidly superseded them and have held the field undisputed for ten years at least.

In point of merit they stand in the order named. The latter has never amounted to much here. The Mountain (Red) is the most vigorous grower, less productive than the Downing and a trifle smaller, but the Downing has been the leading Gooseberry in every respect for us. It now has a formidable rival in the Triumph, a berry a third larger, as vigorous and productive apparently, and of a greener color. As we use Gooseberries for canning or marketing in a mature, but yet unripe, condition, these qualities answer every purpose. Those who have become disgusted with attempting to grow the foreign kinds on account of their mildewing propensities need not hesitate to plant any of these American kinds through the dread of this pest. The new Industry Gooseberry, so highly commended, has proved a total failure with us. The plants could be persuaded to live a year or two and make a feeble attempt to grow, but they finally gave up the struggle without yielding a single specimen of fruit. This was one more proof that the plants of native origin are the only ones to trust. As a dessert fruit when ripe the Gooseberry is little used, but so long as pie holds its place as an article of diet, canned Gooseberries will always be in demand.

Of Blackberries, besides the old reliable Kittatinny we have the more recently introduced Early Cluster and the Erie. Between these two in point of earliness there is little to choose. Erie is the larger, but like the Lawton, it needs half its weight in sugar to be palatable. The Cluster is not so intensely sour, but most Blackberries have this defect unless they are thoroughly ripe, and it is impracticable to leave them on the canes till this stage is reached, because then the bees and wasps begin at once to prey upon them. These raiders are good judges of quality; they never attack a Blackberry until it is fully ripe. The Snyder is hardy and very productive, its small size being the chief objection to it. There is little choice between Snyder, Taylor and early Harvest. After all, the Kittatinny is the best one of the whole tribe we have ever seen or tasted. That it is so liable to the attack of the Orange rust is a great pity. A Vineland correspondent writes that he has the finest crop of Missouri Mammoth he ever saw of any variety, excelling even the Wilson, Jr.—a choice variety in that region. This Missouri Mammoth was tried here a score of years ago, but failed to show any striking merit. The old Dorchester, now very seldom met with or heard of, was one of the most satisfactory ever tried on our grounds. It was early, of fair size and good quality, not as rich as the Kittatinny, but it was never deceptive; if it appeared ripe it was ripe. It was only moderately productive as a rule, but in one exceptional season it

yielded an enormous crop. It certainly is worth a trial once more alongside of the newer varieties.

The Strawberry season was about ten days late in its arrival and departure. Chestnut trees are usually in full bloom July 4th, but this year did not reach that condition till the 16th, and yet the handsome and ever welcome little Doyenne d'Ete Pear was on time, giving us the first ripe specimens on the 20th of July as usual. How shall we account for such differences?

Montclair, N. J.

E. Williams.

Madame Ferdinand Jamain, but whether an old or a new variety, it has become decidedly popular, and apparently has come to stay.

An addition to this short list of summer Roses may possibly be made in the future by including the new Tea Rose Meteor. This brilliant colored variety, with its fair-sized flowers of bright crimson, has not proved a complete success for winter forcing, being apparently a shy bloomer at that season, but it appears to be of good constitution, and will most likely prove



Fig. 46.—*Rhododendron brachycarpum*.—See page 292.

A Few Summer Roses.

MARIE Guillot is probably the most satisfactory white Rose for summer use—its large, finely formed flowers, of good substance, keeping their character even in very warm weather. But though superior in hot weather, it is not equal to The Bride or Niphotos during the winter season. And the old favorite, Perle des Jardins, is decidedly the best of its color as a generally useful variety, though it has received some hard criticism during the past two or three seasons on account of its partial failure. But its bad behavior in many cases is probably due to the treatment it has received in former years, and there is little doubt but that it has lost some of its original vigor from hard forcing for several successive seasons. When young plants are propagated from this more or less exhausted growth, it is reasonable to suppose that they will lose a portion of their vitality. However, we have not yet found a variety capable of entirely superseding it (the Perle), and therefore it still remains a standard sort among the vast array of good Roses.

As a red variety, American Beauty, or as our European cousins persist in calling it, Madame Ferdinand Jamain, is one of the best, its fine, full flowers being alike useful to the amateur and to the trade-grower. As to the name of this variety, we have no special opinion to offer, though several clever rosarians have agreed that it is the Rose originally sent out as

valuable as a summer variety. An opinion has been expressed by an experienced cultivator that this rose should more properly be classed as a Hybrid Tea, and from its habit and appearance there seems to be good foundation for this opinion, but since it was introduced here as a pure Tea Rose, it has been so termed by the writer.

A few general remarks in regard to treatment may not be inappropriate.

In the first place free ventilation is essential, but when the nights are chilly, as frequently happens in the latter part of the summer, a corresponding reduction should be made in the ventilation, and in bright and dry weather frequent and thorough syringings should be given—twice a day is not too often.

A watering with liquid manure about once in two weeks will also be found beneficial, and in very hot weather a slight shading with very thin whitewash, or some similar preparation, will improve the quality of the flowers.

Of course a prompt application of sulphur will be made when mildew appears.

"H."

Christmas Roses at Christmas are yet a novelty in America. The problem of raising them here in sufficient quantity and cheaply enough for forcing has not yet been solved. Perhaps this can never be done in the open air in the Northern States. For trade purposes, it is necessary to import from Holland

and Germany, where they are raised in large quantities easily and cheaply. A mistake often made is importing too late in the season. They should not be shipped later than the 1st of November, or the flower stems push in transit, which is most undesirable. On arrival, the crowns, with leaves yet on, should be boxed and stored in frames and slightly shaded until the 1st of December, when they may be taken indoors and kept under benches free from drip until the flowering stems appear, when they may be exposed to full sunlight. A night temperature of over thirty-two degrees, Fahrenheit, is sufficient, with plenty of air during day-time. Thus treated the flowers will come clean, and with that natural and charming pink tinge which is so desirable.

Christmas Roses may also be planted in frames slightly covered with leaves, and kept from freezing by an abundance of outside packing, in addition to mats and shutters. But in this way there is difficulty in giving light and ventilation. Sometimes light and air cannot be admitted for days together. And the flowers do not come so fine, so abundantly, nor in such good condition, being often spotted. A pit with a false bottom and having a single pipe beneath would, I think, answer the purpose for forcing well. Treated as ordinary hardy subjects, having only the protection of a few leaves, Christmas Roses never bloom until spring here, and then very poorly.

Lychnis.—This genus is widely distributed throughout the northern hemisphere, and includes some of the oldest cultivated plants; all are of easy culture. *Lychnis alpina* is a dwarf, neat and pretty plant for the rock-garden, forming cushions about six inches high, surmounted by corymbs of rosy flowers. Although naturally perennial, it is little better than an annual here, usually dying after having ripened its seeds. Seedlings, self-sown, flower the following year. *L. Chalcedonica* is a fine border plant. It will hold its own almost anywhere. Seedlings bloom well the first year, and during the course of two or three years form large clumps. This is one of the few scarlet-flowering, hardy plants, and on that account is an attractive and prominent object wherever planted, when in bloom. *L. coronaria* is a very free, pretty, pink-flowered, border biennial. It is rather straggling in habit, but has handsome, grayish-white foliage, and remains in bloom a long time. It sows itself freely. *L. diurna* (Bachelor's Button) is a common plant, growing wild in Europe everywhere. The double form only is worth cultivating. It is propagated by division. *L. Flos-cuculi* (Cuckoo Flower, Ragged Robin) is a well known plant, growing wild in moist meadows throughout the northern hemisphere of the old world. The double form is an excellent border plant. *L. fulgens*, v. *Haageana*, is a very handsome plant for either border, rock-garden or for bedding. The flowers are wheel-shaped, often two inches across, in color varying from scarlet to white and purple. If the seed-pods or capsules are kept picked off it will bloom all summer. Seeds sown now, or later, and the plants taken into the green-house in fall, and kept pinched for a while, will make bushy plants and bloom well during the winter. *L. vespertina* is a common wild plant in Europe and Asia. The double form only is worth growing, and a very desirable plant it is. This variety does not admit of division, forming but a single root-stock, and must be propagated by cuttings, a slow and tedious process in this case, as the pipings are hollow. It is only young shoots, taken from the main stem in spring, which will grow. This plant is a continuous bloomer. It is in flower now, and will remain until frost, and if taken up carefully and housed would bloom most of the winter. The double flowers are the purest white and night scented. They are largely used for bouquet work in England. It grows eighteen inches high.

T. D. Hatfield.

Ripen the Wood.—Professor Johnson, in "How Crops Grow," lays down the fundamental principle that "the amount of food assimilated is not related to any special times or periods of development, but depends upon the stores of food accessible to the plant, and the favorableness of the weather to growth." The farmer, and more particularly the tree planter, can control the conditions favorable to growth in large measure, and he should so manage his cultivation of trees as to encourage early growth, leaving a long season for the maturing of the year's wood. Throughout the west, as a rule, the early spring is marked by frequent rains, followed in early summer by comparatively dry weather. Constant cultivation, however, will keep the soil moist and in fine condition for growth during the month of June and well into July. The habit of measuring cultivation by the number of plowings given is a bad one. Cultivation is only thorough when it

keeps the soil immediately below the surface moist, whether two or a dozen plowings are necessary.

During this season of rapid development the tree is assimilating more food than is needed for immediate use. After culture has ceased, a portion of the extra food thus prepared will be used in maturing the delicate shoots—the cell walls of such parts will be thickened and strengthened, or, in common parlance, the wood will become well ripened. The greater part of the surplus food will be stored in the young growth, ready for the use of the buds when they begin to develop in spring.

It is a prime necessity that the tree's store-houses be secure—that the new wood be well ripened. Late cultivation prolongs the period of growth, and hence retards the maturation of the shoots produced. If growth be too much prolonged the tree has no opportunity to mature the young wood, and winter killing is the result. Throughout the north-west cultivation of orchards and young forest plantations should cease by the middle of July, or the first of August at the latest.

Dakota Agricultural College, Brookings, July 25th.

Chas. A. Keffer.

Orchids in Bloom.—*Angracum Scottianum* is a comparatively new species, differing from the other members of the genus in possessing narrow, terete leaves and stem. The slender peduncles spring from the axils of the leaves, and bear two to three pure white flowers. The spur is yellowish and four to five inches long. This plant does well with us in the Phalanx-house in a basket of moss, being liberally supplied with water all the year. It is very free flowering, and lasts a long time in perfection.

Cypripedium Stonci is a superb and very distinct species, and was until recently somewhat scarce, but is now quite plentiful, and many fine specimens may be seen. The flower scapes are often two to three feet long, and bear three to four very handsome flowers. It not only should be in every collection, but would be found very useful to the florist for cut flower purposes. There are two or three good forms of this species, but the choicest is the very rare variety, *platytanium*. This we have never yet succeeded in bringing to bloom, but we find the plants grow best in a compost consisting of equal parts of loam, peat and moss, and being native of the warmest parts of Borneo, they should have strong heat, with plenty of water, and should not be overshaded.

Oncidium Papilio majus.—This variety is a vast improvement on the type both in color and in size of flower. The narrow upper segments on some now in bloom are fully four and a half inches long. The yellow lip is two and a half inches wide, with a very broad, orange-red band. It is a native of Trinidad, and grows equally well with us in both the cool and warm house on blocks of wood. The old flower spikes will continue to produce flowers for many years.

Kenwood, N. Y.

F. Goldring.

Surface Tillage.—At no season of the year is cultivation between the rows of growing crops more important than during the driest and hottest of summer weather. The chief reason for stirring the surface now is that this operation preserves the supply of soil-water for use by the rapidly growing crops. Incidentally the weeds are killed, and one great injury inflicted by weeds themselves is robbing the crops of the water they need. Deep cultivation is harmful now, not only because the ground is full of roots which would be mangled by the plow, but because it throws up the moist soil from below, and exposes it to the influence of sun and drying winds. But many experiments have proved that a shallow stirring of the surface tends to prevent evaporation from the soil. Evaporation takes place at the surface, and it goes on more rapidly in compact ground, because, as is supposed, of the continuous capillary connection between the surface and the deep soil-water, which is constantly rising. A shallow hoeing of the surface breaks the continuity of this capillary system and covers the open mouths of the tubes with loose earth, which acts as a mulch and prevents the escape of the water into the air. Whether this generally accepted theory is true or not, it is certain that the experience of every farmer and gardener has proved that surface tillage is a great help to crops in time of drought. In our climate crops could utilize much more water than the average supply during the growing season, and it is of prime importance to see that all waste is prevented. S.

Celery of any kind, whether self-blanching or not, is much more crisp and tender if banked with earth. A good way of preventing the earth from sifting in among the stalks, is to wrap each plant in a strip of butcher's paper, say from eight

to ten inches wide. With a garden trowel earth enough to hold the papers in place can be easily managed; then the plants should be hilled up almost to the top of the papers. This plan is recommended for early Celery and is not much more extra work than the tying up practiced by gardeners. Care must be taken to hold the plants erect while putting on the papers.

Pittsford, Vermont

G. A. W.

Plant Notes.

A Manchurian Bird Cherry.

OUR illustration represents a flowering branch of a form of *Prunus Padus*, doubtless of Manchurian origin, as it was raised from seed sent many years ago to the Arnold Arboretum from the St. Petersburg garden as *Prunus Maackii*, a Manchurian Bird Cherry, with pubes-

cent foliage and young branches, while those of this plant are quite glabrous and show no trace of the glandular dots which cover the under surface of the leaves of that species. In Mrs. Treat's notes (GARDEN AND FOREST, No. 21) on June flowers in the Pine regions of southern New Jersey, mention is made of our pretty Lake-flower (*Limnan-*

The European Lake-Flower.

any of the European Bird Cherries. No plant of its class in the collection equals this Manchurian tree in the size and beauty of its flowers. It grows with astonishing rapidity and is perfectly hardy; but, although plants here are now nearly twenty feet high and have flowered regularly for several years, they produce no fruit. In regions where late spring frosts, which would prove fatal to the early shoots and leaves of this tree, do not occur, it will prove an important and interesting addition to the list of small, hardy, ornamental trees. C. S. S.



Fig. 47.—*Prunus Padus*.

cent foliage and young branches, while those of this plant are quite glabrous and show no trace of the glandular dots which cover the under surface of the leaves of that species.

The old world Bird Cherry is a small tree widely distributed through the forests of northern and central Europe; it is found in the Caucasus and in the mountains of Afghanistan, and extends through Siberia to Kamtschatka, Manchuria, Mongolia and to Japan. The variety here figured is remarkable in the fact that its leaves appear fully ten days earlier than those of any other tree in the Arboretum, a peculiarity which gives to it no little interest and some value as an ornamental tree, apart from its very marked beauty when in flower. The racemes of large white flowers, which are deliciously fragrant, appear here early in May, fully two weeks earlier than those of the earliest of the American Bird Cherries, *Prunus Virginiana*, and long before those of

themum lacunosum). This plant is extremely rare about here, I judge. I can find no record of its occurrence in the field notes of local botanists, and have heard of but two limited localities where it has been found growing; and now it is wanting in both of these. Probably it was never an abundant plant; but the European species (*L. nymphaeoides*) is pretty sure to become common enough in the near future, and possibly will crowd out some of our native aquatics. It is not a bad exchange if it replaces our American plant—that of foreign gold for native silver; as the *L. nymphaeoides* bloom is “of a golden yellow color, beautifully fringed, and stands erect like the Water Poppies (*Limnocharis*).” There is a washout in a corner of my pasture meadow, in which Nelumbiums, Water Lilies and other choice aquatics are now growing, and where the golden Lake-flower was represented by a single plant

that had kept within bounds, notwithstanding the prediction of Mr. Sturtevant, from whom I obtained it. "Had kept within bounds" is no longer true of it. Not long since a dog plunged into the pond and tore this one plant into a dozen bits, and now every one is as flourishing as a Green Bay tree, and several are blooming as though the disruptive process was a stimulant to flower production. Two of the fragments of the original plant are far out in the trackless marsh, hidden by a jungle of native plants, but these are no check to its progress; and the European Lake-flower is an established fact. If it will not prove mischievous, long may it flourish!

Near Trenton, New Jersey

Chas. C. Abbott.

Malformation of Cabbage Leaf.

THE specimen from which the accompanying drawing was made was grown on the farm of Mr. Thomas Hume, in Alexandria County, Virginia. It belongs to the

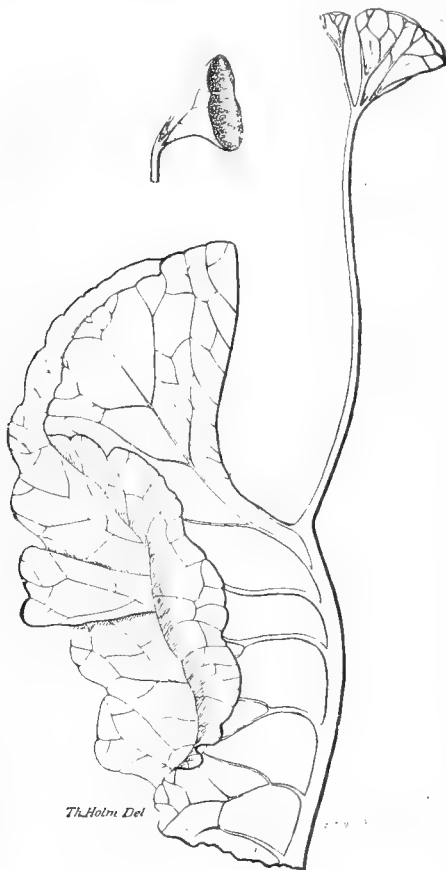


Fig. 48.—Malformed Cabbage Leaf.

Early York variety, and has been observed in several plants. Malformation of this character, although well known, is far from common. Masters, in his "Vegetable Teratology" (p. 313), says: "In cabbages and lettuces there not unfrequently occurs a production of leaf-like processes projecting from the primary blade at a right angle. Sometimes these are developed in a tubular form, so as to form a series of little hornlike tubes or shallow troughs, as in *Aristolochia Sipho*. At other times the nerves or ribs of the leaf project beyond the blade, and bear, at their extremities, structures similar to those just described." The exact significance of this curious growth is not well known, nor indeed is the means of its production. Masters inclines to regard it as a disproportionate growth of some portions as contrasted with others, whence is usually produced a depressed cavity.

National Museum, Washington, D. C.

F. H. Knowlton.

Notes from the Arnold Arboretum.

THE three American species of *Hydrangea* are now in bloom. They are all useful garden shrubs, although the introduction of some of the more showy flowered Japanese species has no doubt caused gardeners to overlook them of late years. *Hydrangea arborescens* is the earliest to flower here by a few days, and, as an ornamental plant, is the least interesting and attractive. It is the most northern American representative of the genus, being found from northern New Jersey to Wisconsin, and southward through the Allegheny region. It is a vigorous shrub, sometimes six or seven feet high, with coarse, ovate, pointed and sharply serrate leaves, pubescent along the principal veins, as are also the young shoots, and rather small, flat cymes of yellow-white flowers, which in the most common form, are nearly always perfect. Varieties (var. *cordata*, *oblonga* and *sterilis*) are described by Torrey and Gray (*Fl. N. America*, i. 591) in which more or less of the flowers are sterile, with enlarged, petaloid

calyx-segments, but none of these, so far as I know, are in cultivation. They would be welcome additions to the Arboretum collection. *Hydrangea radiata* (the *H. nivea* of some collections) is a handsomer plant than the last. It is a native of the mountain country from South Carolina and Georgia to Tennessee, where it sometimes attains a height of six or eight feet. It has large, ovate, cordate, acuminate and sharply serrate leaves, dark green and velvety above, silvery white on the under surface, and fastigate cymes, in which the marginal or ray flowers are all sterile, very large and pure white. Individuals vary considerably in the degree of whiteness of the tomentum which covers the under surface of the leaves. This is a perfectly hardy plant of very considerable horticultural value. But far more showy and one of the finest of all *Hydrangeas* is *H. quercifolia*, a native of Georgia and northern Florida, where it is found in the middle country, occupying the rocky banks of streams, and growing sometimes, under favorable conditions, to a height of fifteen or eighteen feet, with almost tree-like habit. It has large and variously lobed or sinuate, minutely serrate leaves, sometimes twelve or fifteen inches long, tomentose when young, the upper surface finally quite glabrous. The flowers appear in large, crowded, thyrsoid panicles with spreading branches bearing here and there clusters of perfect flowers, and at the extremity a large sterile flower, which, when first expanded, is dull white, turning reddish before fading. The handsome foliage of this plant turns in the autumn to a deep, rich claret color. It is, unfortunately, not perfectly hardy in New England, and rarely attains anything like its full size here, although, if planted in partially shady situations, it will flower every year and soon spread over a considerable space. The only *Hydrangea* which resembles *H. quercifolia* in its paniced inflorescence is *H. paniculata*, the most common of the Japanese species in a wild state, and the only *Hydrangea* which ever becomes really arborescent. A variety of this plant (*H. paniculata grandiflora*), with enormous panicles, on which all the flowers are sterile, long a favorite among the Japanese, is now one of the most common shrubs in American gardens, where it blooms during the month of September. The form of this species in which the terminal flowers only, as in *H. quercifolia*, are neutral with enlarged calyx lobes, is, however, now in flower. In Japan it is a tree or tall shrub; here it makes a bush five or six feet high, with rather ridged branches covered with elliptical-ovate, sharply pointed leaves, sharply serrate only above the middle, roughly hispidulous on the upper and pubescent on the lower surface along the principal veins, as well as the petioles, young branches and panicles. Although far less showy than its better known variety, *Hydrangea paniculata* is a handsome and exceedingly free flowering plant, which has, moreover, the merit of blooming at a season of the year when flowers are not abundant. It was sent to the Arboretum by the Messrs. Parsons, of Flushing, and is still very rare in gardens.

Calluna vulgaris, the Heather of Europe, which is not rare, although very local, in Newfoundland, and was first discovered growing wild within the limits of the United States in the town of Tewksbury in this State by Mr. Jackson Dawson, is now in flower. It is a dwarf, compact, Heath-like shrub, one or two feet high, with short, obtuse, opposite leaves, densely crowded and imbricated on the wiry branches, and long, slender, terminal, spicate racemes of rose-colored flowers, with a colored calyx and bell-shaped corolla. There are varieties with white and with flesh-colored flowers, and one in which the flowers are double, as well as varieties with golden and with silver colored leaves. The *Calluna* is one of the very best of the dwarf hardy shrubs, it is an excellent rock-garden plant and it is useful to form low edgings. It is a good bee-plant, too, and it remains long in flower. In Europe it is largely planted to cover rocky and exposed hill-sides and to furnish shelter for game.

The most interesting shrub, however, in bloom this week, is *Stuartia pentagyna*, the only American representative of the Tea and Camellia family which can be grown in New England. It is a native of the mountains of North Carolina and Georgia. There is a second American species, *S. Virginica*, found in the coast regions from Virginia to Florida, but not hardy in the Northern States, and three Japanese species are described. Two of these are growing in the Arboretum, but they have not flowered yet. *S. pentagyna* is an erect shrub, ten or twelve feet high, with oval or ovate-acuminate, entire or mucronately serrate, deciduous leaves, and large, axillary, sub-sessile flowers, three or four inches across, with creamy white petals, deeply crenulated on the margins, and resembling those of some of the single Camellias. This plant, in spite of the fact that it has been cultivated for more than a

century, is rarely found in gardens, where, indeed, it is so rare that no common or English name seems to have come into use for it. The Carolina Stuartia is, nevertheless, one of the most attractive of hardy summer-blooming shrubs, and it should find a place in the smallest and most carefully selected collections. It is a plant of rather slow growth while young; and it needs to be fully established to develop all its beauties. It is found to thrive in a compost of peat and loam, enriched with an occasional dressing of well rotted manure.

Buddleia is the only member in the collection of the *Loganiaceæ*, a family of which the best known American representative is the so-called Yellow Jasmine of the Southern States (*Gelsemium*), and its only hardy representative among woody plants. There are two species here—*B. Lindleyana*, of China, and *B. curviflora*, of Japan. They are very similar, and as these species appear here they seem merely slightly marked varieties of the same plant. The stems suffer in severe winters, being sometimes killed quite down to the ground, but they always spring up again, and flower profusely at this season of the year. They are three or four feet high here, covered with large, ovate, sharply serrate, pointed leaves, and handsome, terminal, recurved racemes of purple-red flowers. But the interest in these plants is rather botanical than horticultural, and they will probably not be very often seen in American gardens, where many better plants are more at home.

And this is true of *Grewia parviflora* from northern China, a member of the family of which the Linden is the chief representative, and one of the plants for which the Arboretum is indebted to Dr. Brutschneider. Here it is a low shrub, two or three feet high, often killed to the ground in severe winters. The leaves are ample, with three prominent veins, unequally serrate, dark green and hispidulous above, pale and canescent on the lower surface. The small yellow flowers are borne in dense umbels, on stout erect peduncles opposite the leaves, which quite hide them from view. This interesting plant has no horticultural value.

Vitis (Cissus) indivisa is a handsome American species, now in flower. It is well suited for covering trellises or walls, although rarely met with in cultivation. *Vitis indivisa* is a vigorous growing plant, with stems fifteen or twenty feet long, climbing by means of tendrils. The leaves are four or five inches long, heart-shaped or truncate at the base, coarsely and sharply serrate, but not lobed. The panicle of flowers is small and loose, and the berries barely exceed a pea in size. It is a native of river banks from West Virginia and Ohio southward, and one of the hardiest and freest growing plants of its class.

Periploca Græca is a useful plant, too, for covering trellises, and for use in situations where a plant of very rapid growth is needed. It belongs to the Milk-weed family, and is a native of south-eastern Europe and the Orient, whence it was introduced into the gardens of western Europe fully three centuries ago. It has handsome bright green and shining ovate, or ovate-lanceolate, opposite leaves, five or six inches long, and small flowers, green without and purple on the inside, borne in loose, long peduncled corymbs. Twenty feet is not an excessive growth for this plant to make in a single season, but as it continues to grow late into the autumn, the wood does not always ripen, and the stems are then killed back, but only to start again the next spring with renewed vigor.

The development in late years of various garden races of *Clematis*, with very large and showy flowers, has had a tendency to cause many interesting and useful species of this plant to be neglected by gardeners. Three of these, however, now flowering with many others in the collection, are worthy of notice from a strictly horticultural point of view. They are *Clematis coccinea*, *C. graveolens* and *C. integrifolia*. *Clematis coccinea*, a native of Texas, is a smooth, slender vine, climbing to a height of six or eight feet, with three-foliolate, dark green, and rather coriaceous leaves, and solitary, nodding, bright scarlet, ovoid flowers an inch long, and borne on very long, erect terminal peduncles. The thick, coriaceous divisions of the perianth are strongly reflexed, with the interior surface clear, bright yellow. This plant, in spite of its extreme southern origin, is perfectly hardy here, and must be considered one of the best of recent introductions by all who see its abundant and showy flowers. *Clematis graveolens*, sometimes improperly called *C. Orientalis*, in gardens, a name which belongs to a Levantine plant, is a yellow flowered species from Chinese Tartary and the high passes of the western Himalayas. It is a smooth, graceful plant, climbing to a height of eight or ten feet, with slender, obtusely-angled branches, variously divided pinnate leaves, with petioled ovate or lanceolate leaflets, long, slender peduncles exceeding the leaves, and bearing a single clear yellow flower, an inch or more across.

The heads of fruit, with their long, feathery tails, are exceedingly ornamental, remaining upon the plant until winter. This is a perfectly hardy plant, thriving in any good garden soil, and one of the most desirable and attractive of the small flowered Clematisses. *Clematis integrifolia* is a native of eastern Europe and has been cultivated in gardens for nearly three centuries. This plant grows two or three feet high only, and the bright blue flowers are much smaller than those of the Hybrid Clematisses of the Jackman race, which flower with it, but they are as handsome, if not as conspicuous, and they are produced in equal profusion; while this plant is quite free from the diseases which, in this country, sooner or later carry away suddenly and unexpectedly all the hybrid Clematisses, and which make them so thoroughly unsatisfactory here.

July 29th.

The Forest.

The Forests of the United States.

IF the lumbermen of the United States will take the Ninth Volume of the 10th Census reports and read the estimates and statistics on the standing timber of the United States and compare with them the amount of timber cut and sold in the past eight years, in connection with careful estimates being now made over the same ground in the timber states of Michigan, Wisconsin, Minnesota, California, Oregon, Pennsylvania and Maine, they will be convinced that time has proved our estimates to have been approximately correct. The careful examination of that Census work, especially the object lessons presented by the maps of Forest areas, will give, too, some knowledge on timber matters. In Wisconsin, for example, the estimate in 1880 of standing Pine was some forty-one billion feet board measure, of which fifteen billion was in the Chippewa Valley. The eight years' cutting and the present amount of standing timber, estimated now at less than ten billion feet, show the 1880 estimate a fair one. Again the Redwood of California was estimated in the Census report at twenty-five billion; there has been an annual cutting of some three hundred and twenty-five million since; the present estimate being about twenty billion feet, and including much that is not very available. It is claimed that Michigan has less than thirty billion left, and the amount in Minnesota is probably about eight or ten billion feet. Since 1880, the available timber in the southern timber States, from the Carolinas around to and including Texas, the country of the Long-leaved Pine has been more thoroughly explored and estimated, and the available timber has been purchased largely, mostly by northern lumbermen who know the value of timber, and who, having sawed up or sold out their own, have bought this cheap pine and cypress as an investment, paying about twenty and twenty-five cents per thousand. These estimates and more careful reports of expert woodsmen do not add to the Census figures. I think, on the whole, the last report is generally the smaller. On the Pacific Coast, great changes have taken place in this respect. In California, up to 1880, little, if anything, was known of the amount or value of the Redwood of the coast or of the sugar pine of the Sierras. Now the former is all in hands of second and third parties, mostly owned by practical lumbermen who will hold and manufacture it. The sugar pine we may call a "reserve," as it can only be reached by long flumes. In Oregon there is not much change. In Washington Territory, especially about Puget Sound, there has been a decided advance in values, new mills have been built, large companies have been organized who are purchasing timber from the railroads and from Government and are preparing for extensive manufactures of the Fir and Cedar. To say that there is of the Firs, Cedars and other merchantable timbers in Washington Territory, Oregon and in the Pend d'Oreille Region of Idaho, five hundred billion feet, would I think, judging from an extensive examination made in 1882 and 1883, and from reliable sources, be low enough; that it will much exceed this estimate when cut, unless fires destroy it, is my belief. In the Middle States of West Virginia, Kentucky,

Tennessee, and in parts of Ohio, extensive bodies of the hard woods remain not much encroached upon. Still the steadily advancing prices, the greater demand all over the United States and from Europe for inside house-finish, agricultural implements, etc., show that these woods are getting more scarce and valuable.

North of us in Canada, lumber does not seem to cut the figure it once did. The inexhaustible forests of the distant regions have shrunk considerably under the more critical examination of timber buyers and their explorers. The Spanish River country, the North shore of Lake Superior, the vast "Limits" of the Lake of the Woods and the Rainy Lake river country, do not materialize in timber as represented by the Canada Company who sold the foreigners the "Limits." Winnipeg and the country westward is largely supplied now from the rivers in Minnesota that empty into Rainy Lake and the Lake of the Woods. The lumber is manufactured on the Canada Pacific Rail Road and sent over the road to Winnipeg and beyond. These are facts. I have no timber to sell, no reason to understate amounts, but I simply wish to make a fair statement based upon long study of the present condition of our forests which contain timber of commercial value.

Having referred in a former letter to European supply, I will add that the countries of Australia, China, Japan and Mexico already draw from us largely for lumber, their native supplies being mainly in almost inaccessible mountain regions. Mexico has considerable timber, but it is inaccessible at present, and it must probably remain so for a long time.

So we may congratulate ourselves here in the United States that we still have in our forests a wonderful inheritance, of a value that if estimated would run into the thousands of millions of dollars, and all this not covered up in the ground, but in plain sight and upon its surface.

Now, being forewarned by the experience of the old world, let us learn something. The Interior Department at Washington tells us, after more than ten years' trial of the Timber Culture Act on the prairies of Minnesota, Dakota, Kansas and Nebraska, that it is a miserable failure, though it agreed to convey for nothing one hundred and sixty acres of the best soil in the world to every man who could or would succeed in making ten acres of trees of any kind grow upon the land, after eight years' trial. They don't raise the trees. In after years it may be done, but so far the act is a failure, and should be repealed.

What we should learn is to preserve the forests we have by proper legislation, by educating and appointing foresters of intelligence to care for them, by publishing information on the subject—practical information, such as farmers and timber owners can readily understand and apply. American youths should be taught in school and at home that no fires must be allowed to run and that cattle must not run at large among young trees. District and graded schools should be supplied with collections of woods, and pupils should be encouraged to study them.

We appropriated millions upon millions of dollars' worth of land in 1862 for agricultural colleges. One million acres of this was taken in Wisconsin alone, and mostly for the benefit of other states. The Cornell University of New York took five hundred thousand acres of this Pine timber. Much of this land is to-day worth \$50 or more an acre for its timber. The same is true of Michigan and Minnesota. Henceforth the Government should in justice to these three states give to them outright the proceeds of future sales for the establishment of schools of forestry and to pay trained foresters to care for the forests. The same should be done in the southern timber states. An explorer in Alabama writes me, "I can buy for you in this state very finely-timbered Pine lands at Government price, \$1.25 per acre." Why not advance the price, if the Government must have the \$1.25 per acre, to \$2.50 per acre, and give Alabama the \$1.25 taken from the speculator, and let her have a school of forestry? All over our land we are losing millions by

ignorance and carelessness on the subject of forest fires. The people do not realize it at all, especially in our Western States and Territories. In Oregon, Washington Territory, Montana and Idaho, among the Firs and Yellow Pines, the fires are doing the most damage. I have seen millions of acres made bare by fires that were the result of carelessness along the railways in Washington Territory and Idaho. The very fact that a Government forester was ranging the forests about Puget Sound, the Columbia and Willamette Rivers would have a good influence in every lumber camp and along every railroad. I have seen one burning started by a gang of railroad workmen in Washington Territory that destroyed over one million dollars' worth of timber. This fire never would have occurred if such carelessness had been made criminal by law, and if an officer of the Government had been within reach to enforce it.

There is no question but that if \$250,000 a year even were properly spent in care of forests and forest education, it would add millions to future forest values.

Eau Claire, Wisconsin.

H. C. Putnam.

Correspondence.

To the Editor of GARDEN AND FOREST :

Sir.—About thirty years ago a gentleman imported many thousand trees from France and presented them to Dartmouth College.

They consisted of Norway Spruce, White Spruce, Scotch Pine, Austrian Pine, European Silver Fir, Larch, Linden, Ash, White Birch and Mountain Ash, English Oak, Norway Maple, Honey Locust and English Elm.

The Norway Spruces are as fine of their age as any I have seen in this country, and give promise of extending their upward growth eight or ten years longer. The European Larches are very fine and thrifty, and although they have not made as rapid growth as in northern Illinois and Wisconsin, on land of the same quality, yet in one essential point they are more promising than any others in the country, *i. e.*, they are perfecting their seeds, and young Larch trees are coming up freely around them. The European Larch trees producing seedlings stand on a cool, steep, northern slope, and from this I inferred that they possibly produced perfect seeds further north, and wrote to parties in Minnesota to whom we had furnished Larch trees many years ago, and learn that trees planted less than twenty years ago have seedlings springing up freely around them, some now over six feet high, while in Massachusetts, New York, Illinois, Iowa and Wisconsin they have never been known to produce perfect seeds. The specimen in the Bartram garden at Philadelphia, over 100 feet high and over 100 years old, was never known to produce a perfect seed.

Austrian and Scotch Pines are doing as well as I have seen them either east or west of here, but poorly when compared with White Pines in this vicinity. European Silver Fir is an entire failure. Even where well protected, it is not over four feet in height, killing back every winter. European Linden is hardy here.

A few English Oaks in well protected situations have made stems four or five inches in diameter. Where exposed they form a bush six or seven feet high. English Ash and English Elm kill back more or less in winter, according to exposure, and there are no good specimens. Norway Maple stands better than these, but does not endure the winter as well as at Milwaukee. European White Birch is quite at home. European Mountain Ash has apparently been planted quite freely, and many seedlings have sprung up where the original trees stood, but not a specimen now remains of the original planting.

The Honey Locust stands the winter, and makes a fine tree. White Spruce (*Picea alba*), of which there are a great number, were imported with the others. It has been much admired, and has been supposed to be a foreign tree. Every one is a fine specimen, and all are uniform in color, being very glaucous. I am inclined to think that they belong to a variety known as *Cœrulea*, which was propagated extensively in French nurseries thirty years ago. Certainly I never saw a hundred White Spruces so uniform in color before. They all give promise of making durable trees.

I have made an examination of the native as well as the imported trees here. I measured an American White Elm, planted in 1790, which is fourteen feet in circumference four feet from the ground. Sugar Maples of unknown age are over nine

feet in circumference. A White Oak in the cemetery measures more than twelve feet in circumference. A native Mountain Ash—fifty-eight inches in circumference three feet from the ground—a beautiful tree, stands in an old Pine-stump fence, in perfect health and loaded with fruit.

The White Pines and Hemlocks are magnificent hereabouts. Not a Red Pine tree to be found in this neighborhood, so that a comparison cannot be made between this Pine and the Scotch and Austrian Pines. Canoe Birches over six feet in circumference of trunk are not uncommon.

The Norway Spruces, Austrian and Scotch Pines no doubt added much to the beauty and interest of this plantation for many years, as they grow so much faster than our natives while young. If a similar plantation were to be made now, a judicious mixture of White and Red Pine and Hemlocks should be added to take the places of the Norway Spruces, Scotch and Austrian Pines, which could be thinned out as occasion requires.

Hanover, N. H.

Robert Douglass.

[Seedling European Larches, although not in large numbers, have appeared in the plantation of this tree made many years ago by the late Richard S. Fay, near Lynn, in Massachusetts. An account of this plantation, one of the largest and most successful ever made in the United States with exotic trees, will be found in the Report of the Massachusetts State Board of Agriculture for 1875.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—My lawn at the sea-shore extends from the house to the water's edge, and is exposed to the south-west winds. It has run to sorrel and weeds, and must be rejuvenated. Will you kindly tell me through your columns the best thing I can do with it, so as to have a fair turf by June 15th, next year, and not disturb it before the middle of September, this year. What is the best seed to sow and the best dressing to use? The soil is good.

Theoph. Parsons.

Mattapoisett, Mass.

[It is not an easy matter to make a good lawn within the time specified. The seed should be sown this autumn, and, if possible, it should be in the ground before the middle of September, or as soon after as possible. Break the ground up deeply. Cover with well-rotted manure at the rate of thirty to fifty tip cart loads to the acre. Harrow this in deeply with an Acme or spring-tooth harrow. Roll the ground and harrow again, repeating the operations until the soil is very finely pulverized and yet firmly compacted. Sow Kentucky Blue Grass and Rhode Island Bent at the rate of at least four bushels per acre. Then sow Timothy seed at the rate of a peck to the acre; rake all in lightly and roll again. Timothy is not a lawn grass, but the seed can be had pure and it germinates quickly. It will make a fair show before winter sets in, and next spring can be cut over several times before June 15th. This cutting will keep down the Timothy, and prevent its growing coarse and strong while the Blue Grass and Bent are becoming established. The last two will ultimately crowd out the Timothy, which is only needed for its early effect. Without it the grass would be unpleasantly thin next spring. It would be well to give the lawn a top dressing of fine manure after the ground freezes, to remain all winter as a mulch, and for its fertilizing effect.—ED.]

Recent Publications.

Trees and Tree Planting.—By General James S. Brisbin. New York: Harper & Brothers.

This work will meet a friendly reception from all who are interested in forestry as a national question. It is a vigorous protest against the reckless waste of the forests of the country, and an appeal for the exercise of intelligence and patriotic prudence in the treatment of trees. General Brisbin's love of trees—by which the book is inspired—has been life-long. Some of the most pleasant passages in the volume are those in which he recalls the impressions made upon him in boyhood by the mountain forests of Pennsylvania, his native state. It was not, however, until in the course of his professional travels he had seen the savage and inhospitable sterility of the plains, that he was awakened to the importance

of the part played by the forests in their relations to human life and industry. An incident which he relates in his introduction suggests vividly the exhilaration of mind produced by the first sight of living trees after long exile in the western waste. "For four years," he says, "I had lived on the plains, surrounded by sage-brush and sand, never once seeing a mountain or forest. Then I was ordered east with troops to Kentucky. We had been running very fast all night in the cars, and in the morning, just as I was washing in the sleeping-car, I heard the soldiers in the forward coaches cheering. I asked the conductor what was the matter, and he replied, 'The soldiers are cheering the trees.' We all hastened to the doors and windows, and there, sure enough, we found we were running through a grand old Kentucky forest. . . . Even the children clapped their little hands and cried out, 'Oh, mamma, see the pretty trees!'"

General Brisbin's book does not pretend to be an elaborate treatise on the scientific aspects of the subject; indeed, in a modest sentence he in effect disclaims for it at the outset any such character. This prepares one for a certain readiness on his part to adopt theories which are not considered tenable by the more cautious investigators. Nevertheless, the scope of the work is large, and it contains a great amount of valuable information, industriously collected from a number of sources, of varying authority. The opening chapters deal with topics of a general nature, such as "Forest Destruction and its Consequences," "Effect of Forests on a Country," "Danger of Timber Famine," "Shelter Belts," etc. A short chapter entitled "Famous Trees of the World," is full of entertaining information. The greater part of the volume is devoted to a description of well-known trees, both native and foreign.

It is significant of the growing interest in forest production and preservation that one who is presumably without technical training in the art of forestry or in the sciences upon which the best forest practice is based should have been led to pursue this line of inquiry. The perusal of this book cannot fail to arouse and stimulate concern regarding one of the most urgent problems that confront us as a nation at the present day.

Messrs. Hyde & Co. of this city have just published an excellent "Road Chart" for the suburbs of New York. It covers not only Manhattan Island, but Staten Island, Kings and Queens Counties in Long Island, the mainland of New York State for a long distance north of the city and beyond Tuxedo to the west, portions of Fairfield County in Connecticut, and the New Jersey country further west than Morristown and further south than New Brunswick; and it distinguishes between good and poor driving roads, indicates those which are fit only for foot-travel, marks the character of the land as low, marshy, etc., and names the owners of the chief country-places included in its wide circuit. Such a map should open up the beautiful districts around New York to hundreds of urban and suburban residents who have hitherto been discouraged from personal investigation by the difficulty of ascertaining just where and how to go and just what attractions await them by the way.

Recent Plant Portraits.

Botanical Magazine, July.

MACROTOMIA BENTHAMII, *t.* 7003; a stout, hairy herb, of the Borage Family, with dark, maroon-purple flowers, in a large, terminal thyrsus; a native of the western Himalaya and of Cashmere, where it is common at great elevations.

ASPHODELUS ACAULIS, *t.* 7004; a pink-flowered Asphodel, from Oran and Algiers, with pink flowers arranged in a lax corymb, the peduncle nearly obsolete, and the general habit of the plant like that of *Ornithogalum umbellatum*.

ILLICIAM VERUM, *t.* 7005; "The plant producing the true Star Anise of China is here for the first time figured and described. For many years the fruit so called was supposed to be that of *Illicium anisatum*, the *Skimmi* of Japan, or of *I. religiosum*, supposed to be a native of China, but which is identical with *I. anisatum* of Linnæus and Loureiro. . . . The first person to recognize the fact that neither *I. anisatum* of Linnæus or of Loureiro could be the true Star Anise of China was Dr. Bretschneider, who called attention to the fact that the Japanese plant was a reputed poison and that this had been confirmed by Eykman, who, in a paper published in 1881 in the *Mittheilung der Deutsche Gesellschaft für Natur- und Volkenkunde Osten Asien* (Heft, xxiii. 23), had experimented with and given the name of Sikimine to the poison. . . . In his 'Notes on Botanical Questions Connected with the Export Trade of China,' printed at Peking in 1880, Dr. Bretschneider calls attention to a Report by Mr. Piry on the trade

of Pakhoi for 1878-9, which contains interesting particulars regarding the Star Anise. Of this he says it is brought to this port for exportation from the province of Kuangsi via Kin-Chow, and that it is produced in two districts—Lung-Chow, on the borders of Annam, and Po-se, in the West (or Canton) River, close to Yun-nan.

"The Star Anise was, according to Hanbury (*Pharmacographia*, Ed. 2, p. 22), first brought to Europe by the voyager Candish about the year 1588, and was first described by Clusius in 1601 from fruits procured from Loudon. It seems afterwards to have been imported via Russia (and hence called *Cardamomum Siberiense*, or *Annis de Siberie*), and was used by the Dutch in the seventeenth century to flavor beverages. From China it is exported into eastern Turkestan under the name of Chinese Fennel, and in China itself it is called *Pakio nui hiang*, or eight-horned Fennel; the fact being that though commonly compared with Aniseed, the taste is really more like that of Fennel, so that the name given by Redi in 1675 was *Faniculum sinense*.

"In China the Star Anise is employed as a condiment and as a spice, and it is still used to flavor spirits in Germany, France (where it is the flavoring material of *Anisette de Bordeaux*) and Italy. In England, according to Hanbury, it is used only as a substitute for oil of anise." *I. verum* has small, globose flowers, without the long, spreading, inner, perianth-segments of *I. anisatum* or *religiosum*, or of our southern *I. Floridanum*, belonging to an entirely different section of the genus.

CELOGYNE GRAMMINIGOLIA, *t.* 7006; a graceful species, with short basal scapes, bearing two or four white flowers, with a three-lobed lip streaked with purple; a native of Moulemein and the representative of a section of the genus widely distributed through the mountain region of India.

CYPERORCHIS ELEGANS, *t.* 7007; this is the *Cymbidium elegans* of Lindley, a Himalayan species, with handsome yellow flowers an inch and a half long, arranged in a long, dense, pendulous raceme. There are two species of *Cyperorchis*, this, and the fragrant, white-flowered *C. Mastersii*.—*Botanical Register*, 1845, *t.* 50.

Notes.

Sixteen bushels of nuts were gathered last year from two English Walnut trees planted thirty years ago in Contra Costa County, California.

The fine specimen of the California White Oak (*Quercus lobata*) upon General Bidwell's farm, known as the "Sir Joseph Hooker Oak," to which reference was made on page 275 of GARDEN AND FOREST, has a trunk diameter of seven feet and three inches, while the branches spread one hundred and forty feet.

American inventors are invited to send for competition to the Exhibition of the Imperial Society of Austrian Pomologists apparatus to be used in the cultivation of fruits, and in their subsequent disposition by pressing for beverages, drying, packing and other methods of preservation. The exhibition will be held at Vienna from September 29th to October 7th.

An interesting sight on the grounds of Mr. Peter Henderson, Jersey City Heights, is a field of Lima Beans, which are also strictly Bush Beans. The plants are erect, from fifteen to eighteen inches high, and bear up sturdily under a heavy load of short, though well-filled, pods. The beans are apparently identical with the small variety of the Lima known as the Sieva.

Insect Life is the title of a new periodical bulletin devoted to the economy and life-habits of insects, especially in their relation to agriculture. It is published at Washington, and edited by the entomologist of the Department of Agriculture and his assistants. Professor Riley announces that it will be issued as regularly as an ordinary monthly, and will complete the first volume with the year.

Throughout a considerable district in northern New Jersey the potato-tops have been dying before they reach maturity, and many fields of late varieties will not yield half a crop. Mr. Carman, of the *Rural New Yorker*, has found that the destruction is caused by the Cucumber flea beetle, an enemy easily overlooked on account of its small size, and one, too, not suspected of being capable of causing so great damage.

Professor Riley reports the imported Asparagus Beetle (*Crioceris asparagi*) as gradually spreading southward. Following the coast and the water-courses, it was found four years ago at Cherrystone Creek, Maryland, and in 1886 it had reached Old Point Comfort. Inland it spreads more slowly and never damaged Asparagus beds in Washington until 1887. The

most southern inland point where it has been reported is Falls Church, Fairfax County, Virginia.

The Paulownia has so long been familiar in our Middle States as a tree of large size, that it seems curious to read in a German periodical an enthusiastic article describing, as a noteworthy object, a tree of this species which has attained a height of five and a half metres. We are told that it blooms each season, but that year by year it develops smaller leaves and has probably passed its prime. The first Paulownia which bloomed in Europe was one in Paris the flowers of which appeared in 1842.

A page in a recent number of the *Illustrirte Garten Zeitung* of Vienna is devoted to praise of the Niagara Grape and descriptions of the success which has attended its cultivation in this country. Three years ago, the author states, specimens of its fruit were exhibited at a Congress of the Fruit Growers of Lower Austria and a local grower was induced to attempt its production by the same cross from which it had resulted in America. His young vines already look so well, it is added, that their fruiting is awaited with extreme interest.

About thirty miles in a south-westerly direction from Paris, in the old town of Rambouillet, is a so-called English garden, which dates from about the year 1780. Here is a grove of fully one hundred of our Southern deciduous Cypresses (*Taxodium distichum*), which are probably the finest to be seen in Europe. They are growing in a low, moist piece of ground, perhaps six acres in extent, and well suited to their development. In the spring their bright green colors and graceful forms make a strikingly beautiful picture. In the "French Garden," on the other side of the famous chateau, is an avenue of the same kind of tree, about 400 yards long, in which many of the trees measure four feet in diameter.

There have been in Germany during the last twelve years sixteen scientific stations devoted to the investigation of meteorological and other phenomena connected with the forest. At the Eberswald Station observations have been taken during a number of years for the purpose of determining the difference in the temperature of the soil in the forest and in the open ground. Two posts were established, the first in a grove of Scotch Pines forty-five years old, and 375 feet from the open ground, the other at a point 795 feet from any wood. At each of these stations readings of the thermometer have been taken daily at 8 A. M. and at 2 P. M. at the surface, and at depths varying from six inches to four feet below the surface. The results of these observations may be briefly stated to be: that the temperature of the soil at the different depths averages one degree higher in the forest during the winter than in the open ground, and that it is nearly three degrees cooler in summer, so that the extreme variations of the soil are four degrees less in the woods than in the open ground; that the forest has the same effect upon temperature as depth below the surface has—that is, it retards and modifies extremes, and makes variations slower and more regular in their appearance and disappearance. A full account of these experiments and others carried on at these stations can be found in the annual reports which Dr. Mutrich has published since 1875, and which can be obtained from the Berlin bookseller Springer, 3 Monbijonplatz.

The feature of the Saturday exhibition of the Massachusetts Horticultural Society on August 4th consisted of several large collections of Sweet Peas. The finest flowers in twelve unnamed varieties were shown by Mr. W. Patterson, gardener to Mrs. Charles Francis Adams, of Quincy. M. B. Faxon, the Boston seedsman, staged twenty-five named varieties, of which the finest were Black Purple, with dark, rich, purple, nearly black flowers of fine substance and color; Butterfly, light, clear lilac; Painted Lady, pink and white, clear and very delicate; and Invincible, dark, clear scarlet, and by far the handsomest flower in the collection. Many of the newer varieties are lacking in clearness of color, and give evidence that too much attention has been given to the development of large flowers at the expense of clear self-colors. Sweet Peas are now great favorites with the public, and the windows of Boston florists often contain beautiful displays of this flower, tastefully arranged with Maidenhair Ferns, Summer Carnations and trailing Asparagus. At the same meeting of the Massachusetts Horticultural Society Mr. James Comley, gardener to Mrs. F. B. Hayes, of Lexington, exhibited the flowers of a number of interesting hybrids between *Nymphæa cyanea* and *N. dentata*, showing a considerable variety of form and several distinct shades of color, from pale to very dark blue. These are the first flowers from several thousand hybrids raised by Mr. Comley, and seem full of promise for the development and improvement of Water Lilies.

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The Society of American Florists.

THIS association, although young in years, has already become, in the broadest sense of the word, a national organization, embracing in its membership the most prominent commercial growers of plants and flowers in every state of the Union. Subordinate societies, known as Florists' Clubs, have been formed in many cities, and the frequent meeting of these clubs and their vital connection with the parent society make an organization strong and efficient to secure with certainty and promptness every advantage that comes from co-operative effort. Primarily, it is a trade organization, created and developed for the benefit of that rapidly increasing class who have a business interest in growing plants and cut flowers. In a genuine sense, however, the influence of the society reaches all who love flowers and cultivate them, and this influence, so far as we know, has been for good only. In some cases, it is true, the formation of a Florists' Club has been followed by the sudden death of the local Horticultural Society, but societies with such feeble vitality have little excuse for surviving. There is no essential conflict between the trade-associations, whose work lies in one special direction, and the horticultural societies, which occupy a broader field for purposes other than commercial. The two associations should be mutually helpful, and all the more so when each is held strictly to its distinctive work. Certainly a horticultural society falls short of its highest aim when it is managed so exclusively in the interest of trade that the establishment of a florists' business club in its neighborhood leaves nothing for it to do.

Horticulture, in the fullness of its meaning, is a domain which this association and its offshoots do not attempt to occupy, and yet while working in their restricted field and for a special purpose, the meeting of the florists here in annual convention this week has awakened more general attention than any similar gathering in recent years. This is partly owing to the fact that the promised attendance will be much larger, that the subjects announced for discussion are of greater practical interest, and that the exhibition of plants, flowers and florists' appliances will be

more varied and extensive than at any former meeting. But behind all this is the additional fact that flowers and floriculture have a deeper hold upon the affections of the people every year, especially in New York, the centre of the most important Rose-growing district in the country, and the market in which more cut flowers are sold than in any other city on the globe. The cultural questions discussed will be an education to amateurs as well as to the members, and so will all information relating to the special habits and uses of different plants, to the use of insecticides, to the construction of green-houses, and to other matters of practice. In a wider sense every discovery made and every forward step taken, that will prove helpful to the members from a business point of view, will also be of advantage to the buyer, as it enables him to secure plants and flowers with less trouble and expense. The reduction of postage on plants, seeds and bulbs, for example, which has just been effected, largely through the labors of this organization, will make it possible for all who buy plants to secure larger ones and more of them at the old rates, not only through the mails, but by express as well, for express charges will be reduced as they come in competition with the post.

To the members themselves the value of these gatherings can hardly be overestimated. The production of flowers under artificial conditions, and at unnatural seasons, together with the weakening effect of high cultivation and the inbreeding of varieties, have inevitably developed diseases and pests hitherto unnoticed or unknown, and in the study of these difficulties a comparison of experience by men from widely separated regions is an invaluable aid. Nor will this interchange of experimental knowledge be confined to any single topic, but will be found of value throughout the entire range of commercial and cultural practice. And again, the instruction thus imparted will not be derived alone from the formal addresses and the still more suggestive discussions that follow them. One of the leading plantmen of the country recently stated that a suggestion dropped by a fellow member in a casual conversation at a meeting of the Association in Chicago had enabled him to save thousands of dollars in glazing his green-houses alone. Apart, then, from the recreative and social features of this meeting, from the instruction and pleasure offered by the exhibition, which will illustrate the most progressive practice in every department of floriculture and floral decoration, and the advantages that come from travel and enlarged acquaintance, the intimate association for days together of several hundred alert business men, engaged in the same pursuit and studying the same problems, must tend to give every member fresh ideas, quicken his spirit of enterprise and broaden his mental horizon.

The Society of American Florists has already accomplished enough to justify the hopes of its founders, to merit the good will and command the respect of all who are interested in floriculture. It is under the guidance of intelligent and progressive men, and it is destined to wield a still more important influence as the great industry which it represents continues its wonderful growth. It is only when we consider how largely the public is dependent upon nurserymen, seedsmen and florists for instruction in practical horticulture, and to what extent the buyer's selection of varieties is controlled by the illustrations in their catalogues, the trees, shrubs and vines in their trial grounds; the floral displays in their shop windows, and the discussions in their societies, that we begin to realize the public importance of these gatherings. Fortunately the tendency of these meetings, so far as they are educational, is towards greater simplicity and naturalness in the way of decorative planting and floral arrangement. A steady progress in this direction is manifested in the trade from year to year, and if the time should come when the leading members of the Society are not as conspicuous for good taste as for business enterprise and ability, it will not be the result of the deliberations at these assemblies.

Spring-Flowering Bulbs.

THIS is the season of the year when the catalogues of the Dutch bulb-growers should be carefully studied, and when people should determine what bulbs they will plant for the decoration of their gardens in spring and where and in what manner they shall be planted. The bulbs need not be placed in the ground until October or even until November, but it is well, in all that relates to the garden, to take time by the forelock, and not to put off the planning of planting operations until the planting time actually comes. And if the bulbs are imported direct from one of the great Dutch bulb-farms, as is the most satisfactory and economical method if many plants are needed, six weeks at least will pass after the order is sent before the bulbs arrive, so that if it is sent late in the present month or early in September, the plants will not arrive too early for autumn planting.

The cultivation of hardy spring-flowering bulbs is one of the most delightful, as it is one of the most satisfactory of all forms of gardening. Many of the plants classed under this head yield flowers which no inhabitant of the tropics can excel in delicate charm or in gorgeous splendor. No plants are more easily cultivated, and none give so much pleasure for the small amount of money which they cost. Many of them increase and multiply without care, beyond the first planting, and, once established, go on flowering year after year almost indefinitely.

There is a charm in these early spring flowers, appearing among the melting snows, the first indication that the long winter has come to an end, which each year grows stronger and stronger, and which no other feeling inspired by the contemplation of Nature's workings ever quite resembles. Men tire of the most splendid Orchids of the tropics, of the masses of color which modern horticulture spreads over the Chinese Azaleas, of all the garden show and gorgeousness of these later days, but who has ever tired of a Snow-drop or a Daffodil in early spring?

There is a much larger variety of hardy spring-flowering bulbous plants than are usually met with in American gardens, which, by a proper selection, may be made gay or interesting with them from March until July, or from the time when the earliest Snowdrops and Crocuses appear, until the blooming of the so-called Spanish and English Irises in mid-summer. Many new species and varieties of the Crocus have been introduced into gardens of late years, and the blooming period of the plants of this genus has, in this way, been materially prolonged. Among Squills there are many charming flowers blooming in succession during six or seven weeks. The number of different Narcissus which can now be grown is almost endless. The attention which has been bestowed upon these plants of late years in England, by botanists and by gardeners, is one of the most interesting phases of modern horticulture. It has resulted in the reintroduction of many species of Narcissus long lost to gardens, and in the production of many new hybrids of more than passing interest and value. The Tulip and the Hyacinth are too well known to need mention here; except to call attention to the fact that many of the species of Tulip, which have been described at different times in the columns of this Journal, exceed in beauty as they certainly do in interest, those of the more familiar garden races. They should find place in every garden, with quantities of Narcissus and Squills, Alliums and Snowdrops, Snowflakes and Crocuses, Fritillaries and Dogtooth Violets, Ornithogalums and Lilies-of-the-Valley. There never was a garden in which there were too many of these plants, or in which some corner could not have been found which might have been made more attractive by their presence.

Persons who have only seen spring flowering bulbs in formal garden beds can form but a faint idea of the pleasure which can be got from them when they are planted in natural groups or masses along the borders of wood-walks, in the fields among grass, or in the rough and unkept parts of the garden. Our illustration upon page

306, representing a quantity of the Poet's Narcissus, and of one of the late blooming tall Squills (*S. campanulata*), grown in this way near a wood-walk in a garden in Massachusetts will serve, perhaps, to give a slight idea of how such plants can be properly associated together, and how their greatest charm and beauty can be brought out.

All bulbous plants, however, cannot be satisfactorily used in this way. A garden Tulip or a garden Hyacinth planted in the grass appears as much out of place as a Dock in a trim parterre; but all the Narcissus look better in the grass than in a border, especially the Poet's Narcissus, and the Jonquil. Crocuses are more attractive when planted in this way than in formal beds or as edgings; although they harmonize less perfectly with their surroundings than Squills, all of which look their best when allowed to run wild. Many bulbs last longer and increase more rapidly when left to themselves in this way, than when planted in borders, from which it is often necessary to remove them. It is essential, however, that all these plants should be allowed to thoroughly mature and ripen their foliage. They cannot, therefore, be planted in grass, which is cut early in the season, and even if this were not the case, such plants springing from closely cut turf look less at home and less natural than when they grow among tall grasses or the wild plants which are found along the borders of woods or on rocky banks. These bulbous plants delight almost universally in deep, rich soil, and if they are to be naturalized, and are expected to flower year after year, and to increase, it should be provided for them when the bulbs are first planted. If this is done, no further care or attention need ever be paid to them; and every year when they bloom, the fortunate possessor of a garden in which such plants thrive, will rejoice with a new and ever increasing joy.

Mr. John Kenrick established in 1797 a commercial nursery of ornamental trees in Newton, Massachusetts. Two acres, a large piece of ground for such a purpose at that time, he devoted to the cultivation of the Lombardy Poplar, which was about the only ornamental tree for which there was any demand in those days. It is worthy of remark that the Poplars which Mr. Kenrick and others propagated and distributed by thousands and by tens of thousands early in this century have now nearly all disappeared. Here and there a decrepit and half dead Lombardy Poplar may still be seen in the Eastern States, but their beauty is a thing of the past, and each year reduces their number. It is not old age alone which affects them, for young trees, after growing during a few years with vigor and rapidity, perish by piecemeal, branch after branch falling away without any apparent cause; and it is not the climate of America which is fatal to this tree, for it is disappearing in Europe in the same manner. These trees abounded in France, in Germany and in Italy half a century ago; now they are comparatively rare in those countries, and the specimens which remain are not more healthy than those seen in the United States. It is not improbable, therefore, that the Lombardy Poplar will disappear entirely. All the individuals of this tree, which is considered an abnormal form of the Black European Poplar, have descended probably from one or from a comparatively few individuals whose peculiarities and weaknesses of constitution have thus been handed down from individual to individual without change, and without the infusion of new blood which plants derive from cross-fertilization among individuals of the same species, or by the hybridization of nearly allied species, and without which no race can endure for any considerable period. Cases are not unknown where plants propagated exclusively by division, for the purpose of perpetuating some peculiar characteristic not transmittable to their offspring in the natural way, have entirely disappeared; and this will probably prove true, sooner or later, of many trees of

abnormal habit like the Lombardy Poplar and of trees with peculiarly cut or variegated foliage, although there is always the chance that seedlings will appear with similar peculiarities to renew the race with fresh blood. The Purple Beech, for example, so potent is the peculiarity to which it owes its name, often comes true from seed; but individual peculiarities of this sort are not, as a rule, very firmly fixed in the case of trees, and cannot be depended upon to repeat themselves with much certainty. It is fortunate that they cannot, and that many of the monstrosities in which modern planters so delight are blessed with feeble constitutions, and are doomed to disappear entirely off the face of the earth. But the failure of the Lombardy Poplar is not a blessing. Planted as it was a hundred, or even fifty, years ago, in all possible situations, without regard to its surroundings or to the positions in which it was placed, it did more, perhaps, than any tree which has ever been planted, especially in some parts of Europe, to disfigure the landscape. There is no tree, however, which can take its place, or which can so quickly send up a tall, slender shaft to break a low or monotonous sky line. It became an unpleasant feature in the landscape only when it was used without judgment and without discretion.

A Wood Picture.

WE are sometimes told that Nature hides her choicest products from all but those who are willing to search for them in the more secret recesses of her great laboratory of beauty—that she spreads indifferent things before the indifferent world, and reserves her loveliest for her true lovers. But the charge is hardly a just one. Generally speaking, the most beautiful plants are not the rarest. It is truer to say that to many eyes the rarest will always seem most beautiful, simply because of their rarity.

But if we speak not of the things which grow, but of the way in which they grow—not of Nature's productions as such, but of the arrangements, the compositions, the pictures into which she weaves them—then we may confess that no one understands her power who is familiar only with roadsides and meadows and the trodden paths of the woods; and no one who, in more secluded places, takes account of the large things but overlooks the small. In the heart of the forest or the depth of the swamp or by the tangled margin of the lowly rivulet we must search amid Nature's little things to find what she can do in the way of producing varied, delicate, subtle and tender effects of beauty. One such effect I found not long ago which seemed to me to deserve description quite as much as any of the conspicuous features of the very beautiful Catskill country I was visiting.

In the heart of a moist hillside forest, chiefly composed of young Beech trees, thickly bestrewn with large boulders, and carpeted with rich patches of Fern, I found a smooth, gray trunk set close to a low, rounded rock, beside which the Ferns grew in tall, feathery tufts. The top of the rock on the side furthest from the tree sloped gradually into the ground, and was covered with green Mosses and a tangle of Strawberry vines, from which the scarlet fruit hung profusely in scattered bunches. Close to the tree the rock was bare, but in a hollow of its surface the large-flowered Wood-sorrel (*Oxalis Acetosella*) had taken root, forming a great cluster of drooping, heart-shaped leaves spangled with white, starry blossoms delicately veined with pink. A fissure in the stone began near this hollow, passed around to the front of the rock, and slanted across its face to the lower corner beneath the Strawberry vines, and all along this fissure the *Oxalis* had spread so that a garland of leaves and flowers seemed to have been thrown around the stone. No artist could have imagined anything so exquisite—could have chosen materials which contrasted so effectively yet har-

moniously in form, texture and color alike, or could have disposed them with such skill that there should not seem a leaf too many or a flower too few, a line out of place, a color too strongly emphasized, a detail of any kind that might be altered without detriment to the general effect. And what artist could have executed any idea with such delicate completeness that the closer one looked the more beauties one discovered?

It is things like these that one finds in the woods for the looking, but never finds unless one looks. Stones and Beech-trees and Ferns, Strawberries and Moss and Sorrel, are common things enough, but it is only where Nature is most quietly at home, where the foot of man comes seldom and the hand of the flower-gatherer has not trespassed, that she perfects such lovely pictures with common materials, and shows them to us in their dewy, fresh completeness. *M. G. van Rensselaer.*

Foreign Correspondence.

London Letter.

THE interest of the meeting of the Royal Horticultural Society on July 10th was centred in the new hardy plant, *Ostrowskia magnifica*, which has flowered for the first time in Europe in the nursery of Veitch & Sons. This plant has been pronounced by such men as Herr Leichtlin, of Baden-Baden, to be the finest of all the *Campanula* family, and these great expectations have been realized, as it turns out to be a grand plant, and certainly not rivaled by any other herbaceous plant of a similar description. When full grown it is from four to five feet high, with the fleshy root-stock of many other campanulaceous plants. The short stems rise erect as straight as a gun barrel, and the large, sessile leaves are arranged in whorls at intervals of a few inches. Surmounting each stem is a huge flower, fully six inches across, in form like a shallow cup, and deeply divided into eight lobes. The color is a delicate mauve, traversed with a network of pencilings and veinings of a deep purple, while here and there the color deepens. The flowers look at first sight more like those of a large Clematis than a *Campanula*, and it is scarcely credible that such a plant is hardy. Lovers of hardy flowers are in raptures about it, and a brilliant future is predicted for the plant. The vote for a first-class certificate to it was unanimous in committee. It comes from central Asia, in the Turkestan region, and its introduction is due to Dr. A. Regel, who, above all other men, has made us acquainted with the vegetation of this comparatively unknown region.

Among the new Ferns, one named *Gymnogramma Pearcei robusta*, is the embodiment of elegance, and is perhaps the most delicately beautiful of the genus. This variety is remarkable for a stronger growth than the type, and is so different that one would not be likely to confuse the one with the other. The fronds are cut very finely, and being of a peculiar shade of bright green are most attractive. This was shown by Messrs. Veitch. A crested form of the well-known green-house Fern, *Pteris tremula*, was deservedly admired. Every one knows how graceful the original is, and though this new sport does not gain in elegance, its tasseled pinnæ give it a singular appearance. As the fronds are long and recurve, it is thought to be highly ornamental, and one that will take with the market growers.

Messrs. Veitch again showed a large collection of their new seedling green-house Rhododendrons of the Javanese group, and the committee selected for a certificate a very beautiful sort called *Souvenir de J. H. Mangles*. The flowers are very large, compared with older sorts, of good shape and color, and of thick texture; they are a lovely salmon-orange.

Messrs. Paul had splendid blooms of their new dark Rose, Grand Mogul, which already holds a high place among deep crimson Roses. It is as fine as A. K. Williams

in form, is very full and of good build. The color is of the deepest and richest, and the perfume very sweet and powerful. Duchess of Albany is a sport from La France, and differs in no way from the old sort except in a greater depth of color.

Allium Pedemontanum, the finest of all the ornamental Onions, was beautifully shown by Mr. Ware, of Tottenham, and though an old plant now, it had never before been exhibited in such perfection. Nobody would take it for an Onion, so very unlike one are its drooping heads of bell-shaped flowers of a rich, deep violet purple, which, moreover, are devoid of the objectionable garlic odor that accompanies others of the genus. It comes from Piedmont, and no doubt it is quite hardy in America, where it will be considered, no doubt, among the choice bulbs for the rock-garden.

There are few American visitors to London interested in gardening who do not pay a visit to Mr. Cannell's nurseries at Swanley. It is one of the few great nurseries in this country where soft wooded plants of all kinds are grown exclusively. They are for the most part green-house plants, and some of these are grown on a large scale. There is now a bewildering array of plants in the height of their flowering season, but undoubtedly the leading attractions are tuberous Begonias, single and double Pelargoniums, Cannas, Gloxinias and Fuchsias. The Begonias are truly wonderful, and though we are accustomed to see the cream of the new varieties at the Royal Horticultural exhibitions, one can have no idea from these of the effect of a great houseful. The race of Swanley Begonias is remarkable for sturdy and compact growth, enormous flowers, in outline as near a circle as possible in a Begonia, and yet Mr. Cannell says he shall not cease raising new sorts until he can strike a true circle with a compass from the centre to the outer edges of the petals. The colors, too, are as remarkable as the growth, for the entire gamut of tints, from the most brilliant scarlets and the deepest crimson to pure white and clear yellow, is represented, and yet this dissatisfied nurseryman will not rest contented till he gets a blue or a purple Begonia. The half tones are to me the most charming, especially those in which there is a mixture of yellow and scarlet, or, as some call the tint, yolk-of-egg color. In a new group recently raised and appropriately called "Picotee edged" the petals are white or some delicate tint, with a strongly marked edging of rich color, such as crimson. Others, again, have scarlet crimson or pink petals with a conspicuous white centre. I am afraid I shall be accused of exaggerating if I state that I measured some of the single Begonias and found they covered over six inches of my rule, and some of the double ones which look more like Pæonies than Begonias, are over five inches across and make dense globular masses of petals like satin rosettes. There are perhaps more admirers of the double than the single varieties, but for effect in a mass the former are not in it compared with the latter as any one may see at Swanley with houses full of each side by side.

Another class of plants in full blow at Swanley is the hybrid Cannas. These are quite new to most people, who will scarcely believe that such a glorious race of plants have evolved from such insignificant material as the old Indian Shot (*C. Indica*). Probably other species of *Canna* have been used by the hybridist in the production of this new race. These Cannas have flowers as large as those of a *Gladiolus*, and on account of their irregular flowers, they pass very well for Orchids in a cut state. The colors are very strange. Odd mixtures occur among them, such as bright yellow spotted with crimson, Indian or Venetian red edged with yellow, crimson flaked with orange, and such like combinations. I could pick out from the Swanley collection a score of varieties in which these strange colors occur, and all the plants bear noble foliage and are very floriferous. The houseful of Cannas had a very fine effect, as the large leafage, itself of various shades of green and purple, acts as a foil to the tall spikes of brilliant hued

flowers. The Cannas are planted in free soil (not in pots) in a warm, moist house, and the luxuriant growth and abundant bloom show that such is the proper treatment. Mr. Cannell catalogues the new hybrid Cannas as the "coming plants," and I believe he is not far wrong.

London, July 20th.

W. Goldring.

New or Little Known Plants.

Magnolia hypoleuca.

OUR illustration on page 305 is the first which has been published, with the exception of that in the Japanese book quoted below, of this handsome *Magnolia*, one of the largest, and the most northern of the eight species found in Japan, and, economically, the most useful, probably, of the entire genus. *Magnolia hypoleuca** is a common tree in the rich forests which cover the mountains in the southern part of the northern Island of Jesso. Here it attains a height of sixty feet or more, with a trunk diameter of nearly two feet. In habit, if we may judge from the largest plant in this country, it more closely resembles *M. macrophylla* than any other American species, with the same erect trunk covered with smooth, pale bark, and the same wide spreading branches. The stout brown branchlets are conspicuously marked with the round leaf-scars and narrow, stipular rings; and the large, pointed, glabrous leaf-buds resemble those of the North American *M. Umbrella*. The leaves are alternate, or somewhat sub-verticillate toward the ends of the branches; they are broadly obovate, a foot or more long, six or seven inches wide, obtuse, or sometimes shortly cuspidate, rounded at the base, and borne on stout petioles an inch and a half long. They are dark green and glabrous on the upper, pale and covered on the lower surface with short, scattered, white hairs, which are longer and more numerous on the prominent mid-rib and twenty to twenty-four principal veins. The creamy white flowers exhale a delicious fragrance, which may be described as a combination of those of Wintergreen (*Gaultheria*) and of Banana fruit; they are six or seven inches across when fully expanded and appear in New York late in May or early in June. The leathery, petaloid sepals and petals are obovate-spathulate, rounded, or sometimes slightly cuspidate. The stamens and carpels are imbricated on a short, thick receptacle, the brilliant scarlet filaments adding materially to the beauty of the flower. The fruit, which I have not seen, is described by Siebold and Zuccarini as elliptical in form.

The wood of *Magnolia hypoleuca* is straight-grained, easily worked and dull yellow-gray in color. It is the wood commonly used by the Japanese in the manufacture of objects to be lacquered; it is preferred for sword-sheaths, and the charcoal made from it is used in polishing lac.

Magnolia hypoleuca was first sent to this country in 1865 by Mr. Thomas Hogg, and planted in his brother's garden in Eighty-fourth Street by the East River, in this city, which for many years was the most interesting spot in the United States for lovers of Japanese plants.

This tree is now twenty-eight feet high, with a trunk thirty-one inches in diameter three feet from the ground; and it will be a misfortune if the improvements now being made in that part of the city necessitate its destruction.

The northern and elevated range of this species, and the fact that Mr. Hogg's specimen has grown so rapidly in an exceedingly bleak and exposed position, seem to indicate that this tree will prove hardy in the Northern and Middle States. It has been largely propagated by Mr. S. B. Parsons, at Flushing, Long Island. We are indebted to the Superintendent of Central Park for the specimen from which our illustration was taken. C. S. S.

* *Magnolia hypoleuca*, Siebold and Zuccarini, *Fam. Nat.*, n. 349.—Maximowicz, *Bull. Acad. Sci.*, St. Petersburg, viii. 509.—Franchet and Savatier, *Enum. Fl. Jap.*

¹ *M. glauca*, Thunberg, *Fl. Jap.*, 236 (not Linnæus).
"Kwa-wi, Arb., vol. 2, fol. 2, sub. Tan pakou; Fonoki."



Fig. 49.—*Magnolia hypoleuca*.—See page 304.

Cultural Department.

The Vegetable Garden.

VEGETABLE gardening is very well done around Boston and the gardeners there try to have everything of the best. Just now, in early August, Tomatoes are beginning to ripen, Peas are moderately plentiful, Celery has been planted

out, and of Beans, Corn and root crops there is a full supply. Charles Sander, gardener to Professor Sargent, maintains a capital succession of vegetables. For Sweet Corn he uses Cory for early, and Crosby's for the main crop. He grows more of Livingston's Perfection Tomato than of any other. He is partial to Dewing's Turnip Beet and claims to get an even strain of red-fleshed roots. My experience has been different; I have always had some crimson-red and others a good deal banded

with white. Although white or striped-fleshed Beets may taste as well as crimson fleshed ones, they do not look as well upon the table, and therefore should not be used. For Snap Beans he uses Mohawk, Valentine and Black Wax. For Onions, Silver Queen, Red Globe and Yellow Danvers. For Celery, White Plume and Boston Market. He earths up White Plume to make it tender, and sprouts Boston Market to confine it to a single head. Nearly all the private gardeners grow Boston Market to one head, and grow it for a main crop. Now this is a troublesome way. Golden Heart is just as good a Celery as Boston Market and it generally confines itself to one heart and by using it we do away with much of the labor spent in sprouting. But Boston Market keeps best of all Celeries; we usually have it till the end of April. Market gardeners usually plant Celery in single rows, private gardeners often in double rows and in trenches a few inches under the ground level. Mr. Robinson, of Easton, had his Celery on the level, because he thinks this a preventive of rust. But no matter whether it is planted on the level or in shallow trenches rust will appear, and where land is dry and sandy it is essential to plant in shallow trenches to help retain moist-

covers the canes with earth in winter, and with this treatment finds it hardy enough. He would be willing to confine himself to Sharpless and Belmont for Strawberries, the latter being the best in quality.

Glen Cove, N. Y.

Wm. Falconer.

The Plum.

THE cultivation of the Plum in some sections of the country when confined to the foreign varieties, is getting to be quite as precarious as that of the Gooseberry, and hereabouts, at least, it is more uncertain than that of the Peach. If the trees grow they produce a crop of black knots. If they bloom freely and set a full crop of fruit it too often rots before it ripens. We only manage to save the fruit by canning it as soon as it approaches maturity. And yet the time was when the older of the improved varieties, such as Washington, Jefferson and Yellow Egg, yielded good crops, while Damsons and Blue Gages came up in our yards spontaneously and bore abundantly. If this Plum rot is due to a fungus similar to the Grape rot we might discover some remedy or employ the



Hardy Bulbs Blooming in the Grass—See page 302.

ure, for the great point in Celery growing is to keep it moist and in vigorous growth from the time the seedlings appear till the plants are stored for the winter.

Mr. Sander considers Fother's Champion Erfurt one of the best Cauliflowers. Sown about the first of February, and grown along in pots, then planted out in spent hot-beds, twelve plants to a three by six foot sash, he begins cutting Cauliflower early in May. Veitch's Autumn Giant does not do well with him. It does very well here and gives good heads from October till January. Of course if it has not hearted before frosty weather sets in it is lifted and heeled in close in cold-frames.

Mr. Sander finds Christiana the best of all Musk Melons; it never fails to bear and ripen a heavy crop of fruit. He saves his own seed from the finest early fruit. About New York Christiana is a most uncertain variety, seldom of any good whatever with us. Hackensack is our most reliable variety, but it is a large, coarse melon. Emerald Gem has been very satisfactory for the past few years. Surprise is our best red-fleshed melon.

Mr. Sander grows Cuthbert and Brinkle's Orange Raspberries. The latter is somewhat tender, but he lays down and

same or similar means to stamp it out. Here is a good subject for our mycologists to study.

Until the growing of choice Plums is attended with less risk than at present, it is well worth while to pay some attention to our native varieties, of which the Wild Goose is the most prominent and widely known. Its advent was heralded with great promises, but so many different types have been palmed off on fruit-growers that the results have been more varied than satisfactory. The general complaint was unproductiveness, and this was finally attributed to defects in the flowers, and the remedy proposed was to plant it among other kinds that would supply the deficiency in pollen. My original tree stands among a number of other kinds amply able to furnish all needed pollen, and yet it has never been more than fairly productive, and this year is almost an entire failure. The fruit is of an attractive scarlet color, an inch and a quarter in length, with a cross diameter a trifle shorter. It is not a very desirable dessert fruit, but does very well for cooking and preserving. Other trees, sold under the same name, bear fruit not more than half the size. The name Wild Goose is therefore no guarantee as to what the fruit will be.

From sources apparently trustworthy we hear of native varieties much superior to the best of those we have grown under the name of Wild Goose, and it would not be surprising if our best and most reliable Plums were in time developed from this native stock. I have tested but one other Plum of this class, the Reed, which originated at Hightstown, New Jersey, some years ago. It is a splendid scarlet or crimson fruit, perfectly round, and about an inch in diameter. It is also a regular and abundant bearer, so much so that I have counted on a crop in advance with certainty until this season, when, for the first time, it has failed. Like the Wild Goose, it is not of first quality, and will not compare with Bevey or Green Gage, but it is better than no Plums at all. Mr. J. W. Kerr, of Denton, Maryland, has about forty varieties of these Plums on trial, according to the Delaware *Farm and Home*, and among them are some of much promise. Near Carbondale, Pennsylvania, some years ago, I saw profuse crops of Plums in many orchards. The trees were all seedlings, I was told, that came up spontaneously, reproducing themselves with little or no variation. They were of the Damson type in size and color, and it was said that the crop was not an unusual one.

Here seems to be a field for the enterprising hybridizer. If a dash of blood from some of our choicest kinds could be worked in with our sturdy native stock, a strain of this fruit, better adapted to our soil and climate, or, at least, better able to repel the attacks of fungus-disease than any we now have, might be produced.

Montclair, New Jersey.

E. Williams.

Ferns for Basket Culture.

WHILE the use of Ferns for decorative purposes has largely increased of late years, and especially for house decoration and as an adjunct to cut-flower arrangement, yet there are many most interesting species which seem to have been neglected, or rather have not received the amount of attention they deserve. Some of these are particularly adapted to basket-culture, and it is hard to find a more graceful or beautiful object than a well-grown Fern-basket, be it filled either with one variety alone, which is the best plan, or with several sorts. Some Ferns are more attractive when grown in this manner than in any other, as their habit of growth is exhibited to much better advantage when suspended from above. One or two examples from the charming family of Maidenhair Ferns should lead the list.

Adiantum ciliatum is decidedly one of the best fine-growing basket Ferns we have. Its gracefully arched pinnate fronds are from twelve to fifteen inches in length, slightly pubescent, and sometimes pinkish when very young. The fronds of this species, like those of *A. caudatum*, which it somewhat resembles, are proliferous at the apex, and consequently when the young plant appears on the frond it should be pegged down so as to encourage it in rooting, and in this way the entire surface of the basket may soon be covered. *A. dolabriforme* is another excellent sort for basket use and very distinct in appearance, having pinnate fronds from one foot to eighteen inches in length, the rachis being black and shiny in the full grown fronds. The color of the pinnæ varies from a delicate green in the young fronds to very dark green in the matured growth. *A. dolabriforme* is also proliferous, and a rapid grower, so that a good specimen may be soon obtained. Another genus of Ferns, several of whose species make good subjects for basket culture, are the Davallias, the following being among the most useful for this purpose. *D. dissecta*, a well-known and free-growing variety with tripinnate fronds from one to two feet in length; *D. pentaphylla* is also a very handsome and distinct species, having glossy green pinnate fronds from ten to twelve inches long, which by their bright appearance give a charming effect to the plant. It is an evergreen, and though a native of the Malay Islands does very well in a temperature of fifty-five to sixty degrees. Another very pretty sort is *D. Tyermannii*, when well-grown. It has tripinnate fronds from six to eight inches in length, dark green in color when full grown, but in a young state the fronds are often marked with silvery pink.

Among the stronger growing Ferns suitable for basket work, we may mention *Nephrolepis pectinata* and *N. tuberosa*, also the "Stag's Horn Fern," *Platycerium alcorni*, the strange growth and oddly shaped fronds of which are always interesting. All of the above list are of free habit and easy cultivation, and may readily be grown in a temperature of from fifty-five to sixty degrees.

Their chief requirements are shade and an abundance of water when well established. As to soil, a compost of equal parts of light loam and peat with a fair proportion of sand and a little broken charcoal will be likely to give a good result.

Holmesburg, Pa.

W. H. Taplin.

Whitewash for Rose-beetles.

REFERRING to Mr. Pearson's experience in fighting Rose-beetles, as related in a late issue of GARDEN AND FOREST, let me present some notes of an experiment undertaken by Mr. E. A. Dunbar, an extensive fruit-grower of Ash-tabula County, Ohio. Last year he sprayed his Peach-trees with Paris green mixtures, of various strength, when the Peaches were half grown, to stop the ravages of the Rose-bug, continuing, in some instances, the application until the foliage was half killed and dropped off; but the bugs were not diminished, and seemed rather to thrive on the poison. Hand-picking was tried, but with unsatisfactory results.

Early in June, this year, I advised him to try spraying his Grapes and Peaches with a mixture of a peck of air-slaked lime to a barrel of water, putting it on so thick that the foliage and fruit would be well coated with lime when the water evaporated.

In a letter, written July 23d, Mr. Dunbar says: ". . . A thorough application of the remedy advised was undoubtedly the means of saving many dollars' worth of fruit. . . . The Rose-bugs appeared this year about June 12th. One application of a coal-oil emulsion to a few Grape-vines and Rose-bushes killed most of the bugs which were there, but others soon filled their places. I then mounted a Field force-pump on a forty-gallon cask, set on a stoneboat, and slaked about a peck of lime for each barrel of water, and the motion (of the boat) kept the lime in suspension. One man worked the pump, and another directed the spray, on one side of one row of Grape-vines at a time, as fast as the horse walked down the row, and we soon had the vineyard thoroughly whitewashed, and the lime well on the fruit under the leaves. I was disappointed at first in apparent results, as the bugs continued to be quite numerous, but after a few days they vanished, having hurt the Grapes very little, and I have a heavier crop than for several years past. Few Rose-bugs had attacked the side of my Peach-orchard nearest the house, and therefore I did not visit the further side for several days. When I did the bugs had already destroyed many Peaches. I at once whitewashed the Peach-orchard in the same manner as the vineyard, with the exception of one row, and the bugs all emigrated to that row in the course of a day or two. The whitewash showed quite plainly after several hard rains, and one application was sufficient."

I think the effectiveness of the application would have been increased had a small quantity of crude carbolic acid been added to the lime-water. No danger to the foliage need be apprehended from the application of any amount of lime. At this station this season I have had the fruit and foliage of some Plum-trees thoroughly coated with lime for weeks, and they appear even brighter and healthier than those not treated in this way.

Ohio Agricultural Experiment Station.

Clarence M. Weed.

Gentians are plants that should be more generally grown. Nearly all are hardy, as far as enduring cold goes. They merely need enough cover to prevent them from being heaved out by alternate freezings and thawings as the winter breaks up. All need a moist subsoil. Though they succeed well in deep loam, a little peat seems to be beneficial to such species as *G. verna* and *G. Bavarica* and two or three other alpine species.

Gentians are impatient of removal or division. I have failed more than once in trying to establish *G. Burseri*, *G. lutea* and *G. punctata*, all grand yellow-flowered species, from the European Alps. The finest specimen of *G. lutea* I ever saw measured five feet high when in bloom. It had been planted in peaty loam, with brick rubbish added, when a seedling, and had taken three years to mature sufficiently for blooming. Most Gentians are slow in reaching the flowering stage. *G. cruciata* and *G. affinis* will sometimes flower the first year from seed. *G. Pneumonanthe*, *G. asclepiadea* and *G. septemfida* require two years.

In order to insure the germination of Gentian seed, it had better be sown in the fall, and wintered over in a frost-proof frame. The time it will take to come up is uncertain. Seed of *G. septemfida* sown in the fall, will germinate fully the following spring, but if kept dry until spring and then sown, it will come up in a straggling way all summer long, and will not fully germinate until the next spring. So it is with most of them, some even requiring three years for seed to germinate. *G. cruciata* and *G. affinis* are the only species, so far as I know, which will germinate quickly after being sown in spring.

G. Pyrenaica and *G. verna* are at home in moist meadows, and seldom do well in cultivation if removed from the grass

which forms the turf in which they grow naturally. *G. Bavaria* is a swamp species, growing and flowering beautifully if the ground is kept spongy with water, and it is the gem of all the dwarf species. The ultramarine blue of its flowers cannot be surpassed. The lovely *G. Karroo*, from the Himalayan mountains, is the only one which seems partial to shade.

These notes embrace most species in cultivation, but there are many other beautiful species, and varieties of those named above.

T. D. Hatfield.

Wellesley, Mass.

Sweet Peas.—Of the new varieties of Sweet Peas sent out this season the following have come under my notice: Autocrat, Caprice, Autumn Tints, Venus, Beauty, Apple Blossom, Boreaton, Blue Bird, Johanna Theresa, Capt. Sharky and Tricolor. Of these, Apple Blossom, Boreaton, Capt. Sharky, the variety under the two names, Blue Bird and Johanna Theresa, and Splendor, seem to be distinct. Autocrat is identical with Indigo King, Caprice with Princess Beatrice, Autumn Tints with

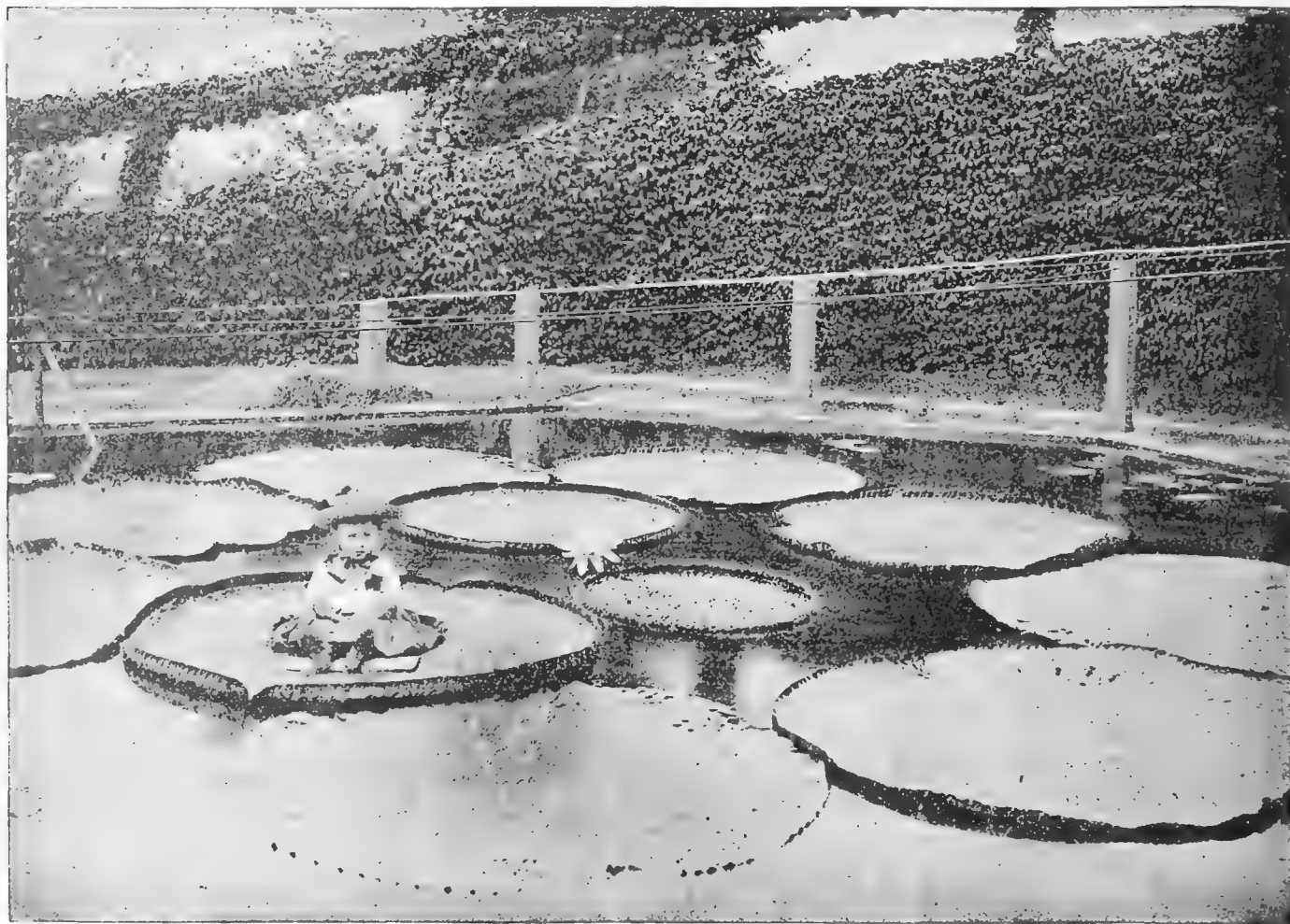
many seedsmen. Sometimes old varieties are sent out under new names, and it is worse than annoying to pay for Peas at the rate of two cents and a half each, and then find that the same variety can be bought for twenty-five cents an ounce.

Newton Highlands, Mass.

A. H. Fawkes.

Cattleya Bowringiana.—This *Cattleya* has not received the attention due to it, although it is one of the finest introductions of late years. Its blossoms are chaste and very beautiful, fifteen of them being often borne on a single spike and that during the winter months, when Orchid flowers are scarce. The sepals and petals are mauve-tinted rose, the lip being of a rich crimson and the throat yellow. It is a native of Guatemala, where it is found growing luxuriantly on the bare rocks, enjoying full sun the greater part of the year. Very little compost, therefore, is needed about the roots of the plant, but a good supply of air and light should be given its period of growth.

Anguloa uniflora.—This fine *Anguloa* was discovered by M.



The Victoria Tank at "Sandyside," Yarmouth.—See page 309.

Orange Prince, Venus with Vesuvius, Beauty with Invincible, Carmine and Tricolor with Capt. Clark.

Apple Blossom, as grown here, does not agree with the introducer's description, which was, "An improved Painted Lady." It is a large, fine flower of a rosy carmine color, edged and blotched with white. Boreaton is very distinct and fine. The standard is broad and smooth, of a dark bronzy color, with darker veins, the wings are purple shaded bronze. One of the finest dark Peas grown, Blue Bird or Johanna Theresa, has a fine, large flower, with bronze standard, and bright, bluish-purple wings and flowers freely. Capt. Sharky is a good variety, which seems to be a sport from Painted Lady. The standard is exactly the same as in the latter, but the wings are rosy carmine. Splendor is indeed a splendid variety, with very large, fine flowers of a deep carmine-rose color. It is one of the very best.

The trade-names of Sweet Peas are very confusing, and some varieties are sold under three or four different names by as

Linden when collecting in the mountains of Colombia. It is an Orchid of very easy culture, producing its white blossoms with the young growths during the months of June, July and August, and they remain in perfection (if placed in a cool temperature) for nearly a month. They are so fragrant that a small plant will fill the house with perfume. During growth all *Anguloas* require copious waterings, and as they are liable to become infested with scale, this pest should be closely watched. Should no signs of this insect appear, they can be kept off by dipping the plants occasionally, say once a month, in a weak solution of tobacco-water.

Oncidium macranthum.—This handsome Orchid, owing to the difficulty in obtaining sound specimens, will always remain, more or less, a rare plant. Its bulbs being soft, decay very quickly when packed in the close cases used for its transportation to this country. It makes a fine Orchid for exhibiting, producing large blossoms in the early spring on very long spikes, often measuring six to eight feet in length,

each individual flower being fully three and a half to four inches in diameter, and of a bright olive-brown and yellow color, remaining in perfection for two or three months. It enjoys a very moist and cool atmosphere, being found at a very high elevation in its native habitat. Imported plants of this *Oncidium* require very little water until new roots appear, or they will decay very quickly. Good drainage, with fresh sphagnum and fibrous peat, are essential to the best results.

A. D.

Plant Notes.

The Victoria Regia.

OUR illustration on page 308 represents the Victoria tank in Miss Simpkins' garden in Yarmouth, Massachusetts, where, under the direction of Mr. James Brydon, tropical Water Lilies are grown in great variety, and with greater luxuriance and success than in any private garden in the United States.

Besides the Victoria tank, which is thirty feet in diameter, and heated by pipes brought from a neighboring greenhouse, there is a large octagonal tank fifty feet across devoted to the cultivation of tropical *Nymphæas*, and filled during the summer months with *N. Devoniensis*, *N. Lotus*, *N. dentata*, *N. cyanea*, *N. Zanzibarensis*, and other species and varieties. Flowers of immense size are produced in this tank, in which the water is kept heated to a temperature of not less than 80° by means of pipes brought from a boiler specially devoted to this purpose, and to heating a small tank-house used for keeping the *Nymphæa* roots over winter and for propagating the rarer varieties. A third and smaller tank, which is not heated, is devoted to the white European *Nymphæa* and to the pink variety of the common Eastern species, which, with the generous treatment here given to it, produces flowers which are nearly double the size of those found growing wild in the neighboring towns of Barnstable and Sandwich.

The Victoria Regia, which is rightly considered one of the marvels of the vegetable kingdom, is too well known to need any description here. It has been in cultivation for more than forty years, and flowered for the first time in the United States as long ago as 1853 in the garden of Mr. John Fisk Allen, of Salem, Massachusetts, who exhibited it that year at different meetings of the Massachusetts Horticultural Society.

The Victoria is found in the tributaries of the large rivers of tropical America which flow into the Atlantic Ocean from British Guiana to Bolivia, having first been detected in 1801 by Haenke in the Rio Mamoré, one of the upper tributaries of the Amazon, in Bolivia.

The seed from which was produced the plant which appears in our illustration was planted in January last by Mr. Brydon in a pail of rich soil, plunged in a small greenhouse tank of warm water. The young plant was shifted once, and early in June, having outgrown its quarters under glass, was planted out in its present position. The tank during cool days, or when there is a high wind, which tears the leaves, is covered with a cotton awning stretched over a frame, placed some feet above the water, the sides of this temporary structure being closed with tight-fitting shutters. Treated in this way, the Victoria will continue to produce its leaves and flowers until the middle of September, and is expected to ripen seed.

Our illustration serves to show that the stories of the wonderful supporting power of the strongly-braced leaves of this plant are not without foundation.

The Home of the Jacobean Lily.

IT is with some surprise that I hear that bulbs collected last autumn on the foot-hills of the Cordilleras of western Chihuahua, having flowered at Kew prove to be *Sprekelia formosissima*. So near our borders! The bulbs were found about six inches deep in light brown soil of ledges or rocky hills, dry situations, where the plants were not crowded upon by many other

species. Buried at this depth it is very likely that the bulbs are out of reach of frost. The plants were in leaf throughout the autumn, and grew sometimes singly, often in clumps, sometimes even in beds, which, at flowering time, probably when the first rains come early in July, must be a brilliant sight.

C. G. Pringle.

Quisqualis Indica.—This beautiful Indian climbing plant—the Rangoon Creeper—although introduced into cultivation early in the century, is now rarely seen in gardens, in spite of the fact that it is one of the very best of all warm greenhouse summer-flowering climbers. It has simple, bright green, strongly veined, sharply pointed leaves, four or five inches long, and axillary and terminal racemes of thirty to forty flowers. They have a long, slender, green, tubulous calyx, three to three and one-half inches long, and a spreading corolla of five petals, an inch and one-half across. The petals are pure white when they first expand, turning a bright orange-red the second day. As the flowers open in succession, each cluster contains both white and red flowers, which contrast beautifully with each other and with the brilliant foliage. The flowers last a long time when cut, and are admirable for decorative purposes, especially in the evening, as few flowers light up better than those of the *Quisqualis*; and it is remarkable that florists have so long neglected this plant. It does not bloom freely when the roots are confined in a pot, but when planted out in a rich border with plenty of room, it will soon cover a space twenty feet square, and produce bushels of flowers from June until October. After the flowering period it should be cut back hard to the old wood; and as it does not start to grow again until towards spring, it does not shade or interfere with the plants placed under it in winter. It is absolutely free from all insect pests. There is a second species, *Q. parviflora*, from Natal, which is not in cultivation.

Quisqualis is formed of two Latin words, *quis*, who, and *qualis*, what kind, a name bestowed upon the plant because botanists were for some time in doubt to what family it belonged. It is now considered a member of the *Combretaceæ* represented in the North American Flora by two littoral trees of semi-tropical Florida, *Conocarpus* and *Laguncularia*.

D.

Clematis Davidiana is a free-flowering, herbaceous species from northern China and Mongolia, with stems two to three feet high, large foliage and sessile axillary clusters of pale blue, tubular, deliciously fragrant flowers, which continue to appear from the 1st of August until frost. They last a long time when cut, and are esteemed by the few persons who know this plant for indoor decoration, on account of their peculiar color and for their fragrance. This, as well as two other closely related autumn flowering, herbaceous Clematises, *C. tubulosa* and *C. stans*, are well worth the attention of florists with a summer and autumn trade.

C.

Notes From the Arnold Arboretum.

THE Sumachs, as the different pinnate-leaved North American species of *Rhus* are popularly called, are all valuable ornamental plants. *Rhus venenata* is the first to bloom, its drooping racemes of inconspicuous flowers appearing in June. This is the most virulently poisonous plant found in the United States. It has much beauty, however; and the coloring of its autumn foliage surpasses in brilliancy that of almost every other native plant, and makes it late in the season the chief ornament of many swamps in the Northern and Eastern States.

The Poison Sumach is followed a few weeks later by the great Stag-horn Sumach (*R. typhina*), a small tree, widely and commonly distributed through Eastern North America; and one of the most ornamental of all American plants in foliage, in flower and in fruit, and especially in the coloring it assumes in autumn. It is not often planted in this country, for the reason, perhaps, that people rarely bring into their gardens the wild plants, which they see in their daily walks, but in Europe, especially in Germany and in France, it is seen everywhere—in city squares and parks, about the railway stations, and in the gardens of the rich and of the poor. And next to ubiquitous Locust (*Robinia Pseudacacia*), it is the American plant which now finds most favor in the eyes of European planters.

The flowers of the Stag-horn Sumach are followed by those of the Smooth Sumach (*R. glabra*), which is blooming just now. It is a handsome shrub, with smooth and glaucous branches; smooth leaves, consisting of many narrow leaflets, which are pale on the lower surface, and immense terminal panicles of yellow-green flowers. It is found on rocky or

barren soil, and is the smallest of the American species, rarely rising to a height of more than ten or twelve feet. There is a variety of this species (var. *laciniata*) now frequently seen in gardens, in which the leaflets are deeply laciniately cut and divided. It was discovered many years ago in the woods in Chester County, Pennsylvania.

The flowers of the Smooth Sumach will be followed in ten or twelve days by those of the so-called Dwarf Sumach (*R. copallina*), which may be distinguished from the other American species by the winged margins of the leaf-stalks, and by the brightly shining upper surface of the leaflets. This plant is dwarf only in name, or rather only at the North, where it sometimes covers extensive tracts of sterile, gravelly soil; but at the South, and especially west of the Mississippi River, the Dwarf Sumach becomes a considerable tree, surpassing the other species in height and in the size of its stout trunk. This is a variable species, especially in Texas towards the southwestern limits of its distribution, where botanists recognize one or two well-marked varieties.

The Button Bush (*Cephalanthus occidentalis*) is in flower. It is a stout shrub with erect branches, eight or ten feet high, with ovate or lanceolate, pointed, pale yellow-green leaves, and conspicuous spherical pedunculate heads of small, white fragrant flowers which remain in bloom for a long time. This is a widely distributed plant, from the Atlantic to the Pacific, and in Eastern Asia, growing in low wet ground, often submerged, along the borders of streams and ponds. It grows well, however, in common garden soil, although it will be found most useful when it becomes necessary to plant low, wet and undrained pieces of ground, where it will harmonize well with Alders, dwarf Willows and other water-loving plants.

The last of the *Spiræas* in flower is the Hardhack or Steeple Bush (*S. tomentosa*), familiar to all northern eyes. It is a handsome plant, which, were it not so common, would be more often seen in gardens. *S. tomentosa* has erect stems, twenty or thirty inches high, covered, as well as the lower surface of the ovate serrate leaves, with a dense brown tomentum, and terminated by a dense panicle of short, crowded racemes of small, bright rose-colored or rarely white flowers. It is found in low, swampy ground, where it spreads rapidly by underground shoots; it is not particular, however, about soil, and thrives as well when transplanted to the garden or to dry uplands as in wet ground.

The flowering of *Spiræa tomentosa* is preceded by only a few days by that of a white-flowered form of *S. Japonica*, often met with in gardens under the names, *S. callosa alba* and *S. callosa Indica*. It is a useful dwarf hardy shrub, remaining many weeks in flower and probably of Japanese or north China origin. It has erect or slightly spreading, somewhat grooved and angled, dark chestnut-brown stems, twenty to thirty inches high, lanceolate, sharply pointed, deeply serrate reticulately veined leaves, dark green above, pale and quite glabrous below. The rather small corymbs of small white flowers on the extremities of lateral branches form a wide and somewhat racemose corymb, often a foot or more across.

The late and long continued blooming period of this plant makes it a valuable addition to the list of hardy summer flowering shrubs.

August 6th.

7.

The Forest.

Farmers and Forestry.

IN no branch of agriculture, perhaps, do the people of the United States so need instruction now as in all matters relating to the care and improvement of the woods and woodlands connected with farms. It is almost a universal custom with American farmers to neglect this part of their property, and to be satisfied if the wood lot furnishes a little pasturage to their stock and a scanty supply of half rotten or worm eaten wood for the kitchen stove. The following article upon this subject, which is reprinted from a recent issue of the *Canadian Horticulturist*, is full of wise suggestions, as valuable to the farmers of the United States as they are to those of Canada:

"The study of forestry for the purpose of preserving those small remains of our wild woods now left on most farms will probably be the first practical attention given to the subject. When so little is known of forestry it is not surprising that every farm owner has a different theory, not distinct enough, however, to make many of them take any real care of their wood lots, or to say anything about it unless applied to.

"It is generally admitted that the forests ought not to be pastured, and there may be a few lots from which cattle are excluded; but I have not heard of anything more being done, and it would be hard to say what should be the next advice to farmers or forest owners. I notice in the last report on prize farms in Ontario, it is said that on one of the best of them the wood lot was cleaned up and carefully seeded to grass, and that, since the farm has been drained, the black Ash trees are dying. This is a management which seems contrary to all principle of forestry, as far as concerns the growth and life of the trees; for the first requisite in forest life is to keep the ground fully shaded—so much so that grass cannot grow—to keep it moist and free from packing, or the tracking of cattle, and to encourage such a growth that drying winds may not enter.

"It seems to me that as soon as a wood gets so thin that grass is seen its effectual growth is done, and it would pay better to cut off one or more acres and convert into good meadow land, and if need be to plant out an acre of old field with seedlings from the same or other forests.

"I do not find in the best forests more than fifty large trees per acre, and we know that Maples or other trees at eight feet apart (680 to the acre) can be grown till they will make half a cord of wood each; and if they are thinned judiciously, or, in any case, if really in vigorous life, they will increase faster than any old forest.

"To preserve a wood lot, if the trees are only of a fair size, thick enough, and few or no dead tops showing, I think it will answer the purpose if it is fenced into one of the ordinary cultivated fields; what pasturing with cattle may occur in a rotation will not likely injure it, as they will not touch trees if they can get anything else to eat.

"If very open and exposed to winds it would be well to enclose the bush with a fast-growing hedge, and in any really open place put in seedlings till the ground is properly covered. Any enclosed wood I have seen soon gets such a growth of young trees about the margin that it is hard work to get into it, and if the main trees are not too old, will, in time, make a heavy bush.

"But I have no intention of doing this, unless, on a careful survey, the bush turns out better than it appears at a glance. After counting out the large dead tops, the swamp Elms, hollow Basswoods, and short-lived Ironwoods and Balsams, there will hardly be enough worth saving, and these woods have been overrun with stock so long that the undergrowth amounts to little. I intend, therefore, to close off the old brush gradually (keeping stock out in the meantime) one or more acres at a time, as may be needed for fuel, etc., and then in proper place for forest and shelter, or on the land inconvenient to cultivate, begin a new forest by planting out regularly just such trees as I want for fuel, manufacturing or protection, to be ready by the time the old forest has been cut away.

"If the growing trees are of a valuable kind, and the owner has skill and patience to begin and carry on a judicious thinning, an old forest can be rapidly improved, but I fancy most proprietors will leave to a thoughtless employee to do the wood cutting; and it often happens that to pick out inferior or dying scattered trees will make the wood dearer than to buy it, and it may do serious injury. I find it stated in a late Ontario report that an owner removed the worthless Elms from a lot and soon after found that he had done too much thinning, for the other, and, what he thought, valuable trees, ceased growing and soon began to fail, and, as a rule, it will be safer to depend on the new planting for the future forest, at least on such small lots as our farms will retain.

"To me it is much more encouraging, for in laying out the forest, the various trees, the Maple for fuel; the Hickory, Ash and Oak for the factory; the Cherry, Basswood and Walnut for indoor use; the Pine and Cedar for outside, I feel as if I were furnishing the property with an attraction for myself and future owners, more than by the biggest castle I could find room for on the highest hill."

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—In an upland sink-hole, more than a mile distant from the river, I have recently found the Golden-club (*Orontium aquaticum*). A careful examination of the spot showed that Indians had once lived on the margin of the little pond; and the question arises, did these people plant the Golden-club in the shallow waters before their wigwam doors? It is, I believe, strictly a tide-water plant, and the chances are slight that birds could have transported the seeds from the river or

nearest creeks, where, by the way, it is not abundant. On the other hand, it is well known that the Indians made use of the plant as food. (Vide Kalm's "Travels in North America.")

In May, 1887, I spent a few days in May's Landing, Atlantic Co., New Jersey, and while boating on Great Egg Harbor River, I suddenly came upon an island of about ten acres in extent, that was densely covered with this plant. It was in full bloom, and the tide being out, the effect was grand. At high water, neither the leaves nor flower-stalks were visible. The high western bank of the river, here, too, was once the site of an Indian village, and I have often asked myself the question, if the *Orontium* island of to-day is the outgrowth of an *Orontium* plantation of two centuries ago. Our Delaware Indians were to a far greater extent than is generally supposed an agricultural people, and to many, I am sure, it would be interesting to know how far there still remain traces of their labors in this direction. In the former instance, I am inclined to believe, we have such a trace; but so far as the island is concerned, I withhold opinion. Nothing botanically need surprise one who ever wandered about May's Landing. The single street and court-house yard of which is shaded by one hundred and twenty-one magnificent white oaks. It is called a "pine barren," but there are hundreds of acres near by that are Nature-planted gardens. Think of it! On "Children's day" the village church was decorated with fifteen hundred stalks of *Xerophyllum*.

Near Trenton, New Jersey.

Chas. C. Abbott.

[The *Orontium* is a common inhabitant of the wet and swampy borders of ponds, from the neighborhood of Point Judith, Rhode Island, southward, generally near the coast, but is by no means a tide-water plant.—Ed.]

To the Editor of GARDEN AND FOREST:

Sir.—The recent discussions in your columns concerning the value of the Norway Spruce as an ornamental tree give fresh evidence of the truth, so often repeated, that advice must be suited to localities. I have often observed the unsatisfactory, unsightly specimens of Norway Spruce in eastern gardens, especially in those near the sea-coast or about large and smoky cities, and I have as often seen admirable specimens of the tree in Michigan and some adjoining states. It is true that this tree is coarse and somewhat harsh in expression, yet it is less objectionable in these features than any other large growing, coniferous evergreen, which is suited to our general conditions. It is easy of culture, takes well to a variety of soils, and even when left entirely to itself, makes a comely and attractive tree. To be sure, it loses some of its characteristic beauty with great age, but in this respect it is not inferior to any other Conifer which has been tried in Michigan. Upon the grounds of the Michigan Agricultural College there are many handsome specimens thirty years old which show no signs of failing. These trees are forty feet high, a foot and one-half or more in diameter at the base, and perfect pyramids of dark, yet soft, green, with an attractive display of light and shade.

But these trees have not been allowed to grow unchecked. Every year or two the main branches have been clipped at the ends with a Waters' pruner, causing the pyramid to fill in and tending to preserve the richness of the lower limbs. An essential operation is thus to nip four or five inches from the pushing shoots of the Norway Spruce every June. It does not appear to be well understood that tolerably old trees of this Spruce may be rejuvenated by a vigorous heading-in. I have seen an old Spruce, which, having become scraggly, was severely cut back. This cutting took place some six or seven years ago. Four or five feet were removed from each main branch and the leader was cut off. For a couple of years the tree presented an odd appearance, but there is now no trace of the treatment to the ordinary observer.

The Norway Spruce varies greatly, fully as much as does the Sugar Maple or the Elm. It is particularly desirable for windbreaks and for single specimens at some distance from the residence. It is true that the tree has fallen in general estimation, even at the West, from indiscriminate planting, yet it has still a foremost place in the affections of our people.

Michigan Agricultural College.

L. H. Bailey.

[It is, of course, possible that the climate of the interior of the Continent may be better suited for the Norway Spruce than that of the Atlantic seaboard. Thirty years, however, do not suffice to test an exotic tree in any particular locality. Norway Spruces thirty years old in the Eastern States are often at their very best, and handsome

and attractive objects; it is not until they are from forty to fifty years old that they begin to fail here at the top and then gradually perish.

It is a good rule that the adaptability of any foreign tree to any particular climate and soil cannot be safely determined until the tree has grown continually in that climate and soil for a period of time equal to the average period of its life in its native country.—Ed.]

Periodical Literature.

In *Blackwood's Magazine* Mr. Coult's Trotter is publishing from month to month an interesting series of articles called "Among the Islands of the South Pacific." His concern is chiefly with the condition of the native inhabitants of the various groups he has visited; but incidentally he gives many charming pictures of their wild and cultivated flora. For example, in his last published chapter, on the Tongan (Friendly) and the Samoan Islands he writes: "It would hardly have occurred to us to introduce cricket if there had been no turf to play on, and yet the natives speak of the introduction (accidental) of our grasses as a grievance. One hardly understands the objection, for the grass sward surrounding a Tongan village gives it, for English eyes, its greatest charm; but their ideal of tidy surroundings is the bare ground with every green blade grubbed up. One sees a well-kept Samoan village thus treated, and no doubt, amid the tropical luxuriance of vegetation, it gives a *soigné* look, and the frequent showers prevent annoyance from dust; but it is not our idea of 'Sweet Auburn.' Other plants besides the grasses have been accidentally introduced by ships and are a very serious nuisance, spreading everywhere and taking forcible possession of otherwise useful land. The worst, perhaps, are one or two malvaceous plants (*Sida* sp.), growing from two to four feet high and so thick that you can sometimes hardly get through them. The *Canna Indica*, too, very conspicuous with its bright red flowers and covering acres of ground, only appeared in Tonga a few years ago." And, Mr. Trotter adds, two imported British plants have become very common, the little yellow *Oxalis* and the Sow-Thistle (*Sonchus*). Around many of the native houses are "enclosed gardens, fenced with Bamboos or with the Croton-oil plant, and always beautiful trees, mostly with showy blossoms, as the *Barringtonias* and *Incarpus* and *Terminalia*, besides *Coco-Palms* and *Oranges* and generally some fine spreading *Banyans*. . . . You generally find pig-sties, often overgrown and shaded with the double white-flowered *Datura*, a mass of blossom." Of the Tonga country Mr. Trotter says that it is delightful for riding and walking, as the green roads traverse the forest in all directions and "this is never quite impenetrable, much of it indeed having at one time or other been under cultivation. The monotony of color, a common reproach to tropical forests, does not exist here. Besides the variety of foliage and of blossoms, chiefly white, on the trees themselves, you have masses of varied colors—*Crotons* and *Coleus*, a profusion of *Convolvulus*, of *Clitorias* and other Peas, and Beans with stout wooden stems, . . . with many other creepers. Not the least beautiful among the trees are the varieties of *Citrus*.

Notes.

The Puritan Rose has not been planted very largely in the neighborhood of Philadelphia for next winter's supply.

It is probable that a National Orchid Society will be organized here this week, while so many lovers of these plants are in the city.

The large panicles of white flowers now so abundant on the *Hydrangea paniculata grandiflora* are in considerable demand in the flower markets of this city. The flowers are cut with long stems and arranged in tall vases, with spikes of *Gladiolus* and occasionally with the Golden Rod.

The crop of the popular Pink Pond Lilies has been unusually small this season, owing, probably, to the continued cool weather. These beautiful flowers are grown for the market exclusively in small ponds on Cape Cod, where they originated. The demand for them exceeds the supply.

A farewell dinner was given to Mr. W. A. Manda, the retiring gardener of the Harvard Botanic Garden, on August 11th, by his friends and associates in the gardening fraternity. There were many expressions of regret at Mr. Manda's departure, and of hearty wishes for his success in his new field.

Rudbeckia laciniata is a grand subject for massing by the side of brooks or lakes. It grows to the height of five or six feet. The yellow ray florets droop, while the cone-like centre is larger than that of *R. hirta*—resembling a lady's thimble. It grows wild in limited quantities near Chestnut Hill, Philadelphia.

In experimenting with some insecticides, Professor Forbes found that for Curculio on Plum; Peach or Cherry, one pound of London Purple to one hundred pounds of water was effective. When used in a ratio of one to fifty the foliage was injured, and when used in a ratio of one to 200 the curculio was not killed.

South-western Michigan has become one of the great peach-growing regions of the United States. The strip of land where this fruit finds most favorable conditions is but a few miles in width, but it extends along the shore of the lake for half the length of the State.

A Palm tree, seventy years old, four feet in diameter and sixty feet high, was lately removed from the grounds of a Mr. Saunders at Los Angeles, California, to the grounds of the Wolfskill Station of the Southern Pacific Railroad. A body of earth ten feet square and six feet thick was taken with the roots. The apparatus used was similar to that used in moving buildings.

The exhibition at Columbus, Ohio, which will celebrate the centennial of the State this coming autumn will include a collection of some 700 species and varieties of trees and shrubs planted by Messrs. Thomas Meehan & Son. None of these plants will compete for any premium, and it is to be hoped that visitors will appreciate the opportunity for instruction thus liberally offered.

The cut-flower trade lasts for only six weeks at Bar Harbor. Sweet Peas are very popular there this season, especially the light-colored varieties. Many of the stone walls surrounding the cottages are planted along the crest with Nasturtiums and other flowering vines, producing a beautiful effect. The "Pine and Palm" is one of the most artistically furnished flower-stores in the country. The cosy little office in the rear, with its great stone fire-place, is much admired.

One corner of the famous Luxembourg Garden in Paris is devoted to the cultivation of Apples, and contains an assortment of 232 varieties. About the first of November of each year the harvesting of the fruit is completed, and the Apples are divided into three lots. The lot which includes the finest fruit is a perquisite of the Prefect of the Seine; the second is given to the Val-de-Grace Hospital, and the third is sold to the restaurants of the city. The orchard is also useful as a source for grafts, which are distributed without charge.

Fine varieties of *Salpiglossis sinuata* are seen this summer in the windows of some Boston florists. The flowers of this showy Chili annual have been greatly improved of late years, especially by French gardeners. The colors, which range from dark purple and blue to clear yellow, and are variously striped, are now "fixed," and come true from seed. The plants are easily and cheaply raised, and the flowers, which last well when cut, make an attractive and very useful addition to florists' material.

On Saturday, August 11th, the Garden Committee of the Massachusetts Horticultural Society paid a visit to the beautiful estate of R. M. Pratt, Esq., at Watertown, Mass. They were conducted through the green-houses and grounds by Mr. David Allan, the head gardener, and as this is one of the best kept establishments around Boston, the visit was one of great pleasure. Among the interesting objects shown by Mr. Allan were several large trees in whose trunks or large limbs decayed cavities had been filled with elastic cement, thus excluding the air, and in every case the bark has begun to close up over the cement, with indications of health and vigor.

The La France Rose is a greater favorite with flower buyers in Philadelphia than in any other city. Rose-growers for that market like it, too, and some go so far as to say that it is the most profitable variety they can grow. There is an increase in the number planted for next winter's blooming over last year, which may have a tendency to make it cheaper. Its one fault with the grower is a liability to "black spot," which it shares with *W. F. Bennett*, *American Beauty* and *Puritan*. The Hybrid Teas are more inclined to black spot than any of the true Teas or Hybrid Remontants. Is this tendency in *American Beauty* to be taken as evidence that it, too, is a Hybrid Tea?

Lælia Eyermanii is a noteworthy acquisition recently introduced by F. Sander & Co., of St. Albans, England, and named by Prof. Reichenbach, in honor of Mr. J. Eyerman, of Easton, Pa., who is an ardent and a most enthusiastic grower of Orchids. The plant is distinct, although resembling *L. majalis*. Its flower spikes are remarkable, having conspicuous well developed leafy bracts at the base of the flower-stems. Several flowers as large as those of *Lælia Gouldiana* are borne on a single spike, with sepals and petals of a rosy purple, and lip of a rich crimson with a fine white throat. Their fragrance is very pleasant, resembling that of *Orchis coriophora*.

In these days of "decorative art" it is interesting to learn that exotic plants are said to have been first cultivated in northern Europe at Paris, for the purpose of furnishing the embroiderers of the time with new and effective patterns. Constructions of glass were used for the purpose and as early as the thirteenth century were to be found in several places beyond the Rhine. Albertus Magnus, the famous "schoolman," and Bishop of Ratisbon was accused of magic by his contemporaries on more grounds than one, but one was his ability to make plants grow and bloom in winter. In January, 1247, he entertained the King of Holland at Cologne, and a feature of the occasion was the exhibition of his forced fruit-trees and blooming plants.

A minute hemipterous insect, *Triphleps insideosus*, closely related to the chinch bug, is doing considerable injury among some of the Chrysanthemum collections near Boston this summer by piercing the ends of the shoots, causing them to "go blind" and the leaves to curl up and wither. The insects are so small and move so rapidly that it is almost impossible to see them, much less to catch them, and there seems no way to destroy them without injuring the plants. Pieces of cloth, which are kept saturated with kerosene oil, and bound around the ends of slender stakes, stuck in the ground among the plants so that the saturated cloth is about on a level with the ends of the shoots, seems to have the effect of driving away the insects, or, at least, a part of them, and may be the means of saving many flowers.

Mr. L. W. Goodell, of Dwight, Massachusetts, has flowered, this year, a plant of *Euryale ferox*, a native of India and China, and, next to its near relative, the Victoria, the largest aquatic plant known. Like Victoria, it is an annual, with spiny, strongly-ribbed, circular leaves, fully two feet across, and armed flower-stalks and calyx, but the flower is violet in color, and not larger than that of the common wild Water Lily. This plant is said to flower freely in the open air in Peking, where the climate is not unlike that of our Northern States, so that there is a chance, at the South at least, that it may become naturalized. Otherwise it will not be very often seen probably in this country, as the flowers are neither sufficiently interesting nor sufficiently beautiful to justify any great trouble or expense in raising it. They are less beautiful than the flowers of the Victoria, which many of the Nymphæas far excel in charm and beauty. Mr. Goodell exhibited sections of the leaves of the *Euryale* before the Massachusetts Horticultural Society on the 11th of August.

Those horticultural visitors to New York this week who are interested in trees should make a point of seeing the *Magnolia hypoleuca* (see page 305 of this issue) on Eighty-seventh Street and East River, and the Japanese Elm (*Ulmus parvifolia*) in Central Park near the Seventy-second Street entrance from Fifth Avenue, which was also brought to this country by Mr. Thomas Hogg. These are certainly the two most interesting exotic trees on Manhattan Island, and they have, of their kinds, no equals in size in the United States, or perhaps in Europe. Prospect Park, too, in Brooklyn, should be visited. The public have a very inadequate idea of that park which is the most beautiful in the United States, and which is considered by good judges to be the best example of a large city-park now existing. Horticulturalists will find in it many rare and interesting trees. A specimen of the green-leaved Japanese Maple (*Acer polymorphum*), near the restaurant, has no equal, perhaps, in the United States, in size. On the main drive beyond the lake is certainly the finest specimen of the rare *Acer pictum* (*A. latum* and *A. Colchicum rubrum* of some authors) in cultivation. The two Silver Lindens (*Tilia argentea* and *T. petiolaris*) are conspicuous features in Prospect Park, and may be seen there in greater profusion and beauty than elsewhere in the United States. The number of good specimens of some of the rarer Conifers in the Park is considerable also.

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The Florists.

THE Florists of the United States have every reason to be satisfied with the meeting of their Association which was held in this city last week. The attendance was larger than at any previous meeting of the Association; and the attention which it received from the press and from the public of this city is certainly gratifying in its indication of the growing interest of the community in all that relates to the cultivation of plants and flowers. The papers read, and the discussions to which they gave rise, were far above the average of such productions. They show that the Florists of the United States are an active and intelligent body of men fully alive to the necessities of their business, and fully determined that if its growth of the last ten years is not surpassed in the future, it shall be by no fault of theirs. Some of the treatises were filled with practical information relating to the gardener's art, and as such, they cannot fail to be real additions to the knowledge of horticulture as practiced by men who make the gentle art furnish them with daily bread, and which fierce competition compels them to practice with strict economy in the true meaning of the word. Such papers the public had a right to expect, but at similar meetings they have rarely listened to papers of a tone as elevated and grasp as broad as that of the President, Mr. Hill, of Mr. Halliday, and of Mr. Battles, of Philadelphia, whose sensible remarks relating to the artistic aspects of the florists' business, and the necessity for greater simplicity of floral arrangements than now prevails, should be carefully read by every man in the United States whose business it is to supply the public with flowers. Mr. Hill pointed out the injustice which many raisers of new varieties of plants suffer at the hands of rivals who obtain a new variety and then, perhaps, send it out again under a new name of their own coining;—an imposition from which the public, especially that part of it which buys "new plants," suffers as well as the florists.

The earnestness of the Association in its efforts to secure a better nomenclature of florists' flowers than now exists is shown by its action in imposing upon its members an as-

essment for the purpose of creating a fund to detect and expose florists who willfully sell varieties under false names. Mr. Halliday's paper upon nomenclature points out the confusion which exists in the names of florists' flowers—a confusion by no means confined to them alone, but pervading the names of all cultivated plants. The committee appointed by the Association to revise the names of plants will doubtless inaugurate a much needed reform in this matter, at least in the case of those plants most important from a commercial point of view, and determine names which the Association, with its powerful organization and influence, will be able to impose upon the trade without very serious difficulty.

The question of obtaining from Congress the enactment of a law permitting trade-marks or copyrights to be taken out for the protection of the rights of raisers of new flowers was not brought before the Convention. The question of copyrighting new flowers is not altogether a new one, and has been discussed in different European countries at various times, as well as in the United States. The right of a man to enjoy the results of his labors is as true when the product is a new flower as when it is a new book or a work of art. The intelligence, thought and study expended in growing a new race of garden-plants or new varieties of such a race is as great as is required to produce a book; but as long as the raiser of new plants must lose all benefits of these creations of his brain as soon as he sells the first individual, and so puts it in the power of his competitors to reap the benefits which should belong to him, the principal incentive to the production of new plants does not exist. This is a subject of such vital importance to the future of horticulture, here and everywhere, that we venture to suggest to the Executive Committee of the Association that it deserves careful consideration at their hands.

The horticultural exhibition held in connection with the meeting was disappointing, and cannot be taken as an example either of the actual condition of horticulture in this vicinity or as a fair representative of the florists' business of the United States. The display of florists' materials—the tools of the trade, so to speak—was large and varied, but these are objects in which the trade and not the horticultural public are interested. Of the products of the garden there was nothing certainly to indicate that this exhibition was held in one of the largest and most important commercial centres of the world, where the trade in flowers has reached a development unknown elsewhere in modern times. Of plants there were practically none, with the exception of a well-grown and well-selected collection of Caladiums from Mr. G. W. Childs' garden near Philadelphia. Gladioli were exhibited in considerable numbers and variety, but they were the Gladioli of twenty or twenty-five years ago, and showed no trace of the brilliant blood of the new races which our hybridizers, following the lead of the French, are now creating by crossing various species of these fine flowers. The large and interesting collection of Orchid flowers sent from Mr. Kimball's garden lost much of its attractiveness and value, for the public, at least, from the fact that they were arranged without taste, and that the different varieties were unnamed. Among the small collection of fruit staged, splendid examples of Barbarosa and Muscat of Alexandria Grapes, from the garden of Mr. M. A. Osborn, of Mamaroneck, must be mentioned. Specimens of Nelumbium, from the pond near Bordentown, in New Jersey, where this plant is now fully naturalized, served to recall Mr. Sturtevant's service to American horticulture, in making the possibilities of Water-Lily cultivation known and the beauty of these flowers appreciated in this country. Lilies-of-the-Valley and Lilacs are not attractive objects in August, and, while it may show ingenuity to flower such plants in the summer, the practice is not one to be commended.

The number of made designs was smaller than might have been expected at an exhibition arranged under such auspices, and, on the whole, they were less objectionable

than such designs usually are. One or two of them showed taste and knowledge.

But the exhibition, after all, was not the essential part of the convention, and the fact that it was not a representative of horticultural progress in the United States, takes away but little from the general success of the convention, which showed that the florists of the United States are not behind any other class of business men in this country in enterprise and in intelligence, and that they realize the responsibility of their position toward the public as educators in many matters of decoration and taste.

The manufacture of cypress shingles has become, of late years, an important industry in the south and south-western States. According to statistics collected by the Southern Shingle Association, the product of the present year exceeds that of 1887 by about forty per cent., reaching a total of 520,000,000. These figures include, probably, a part of the shingles manufactured by hand, as well as most of those produced in the mills, but not all. The domestic manufacture, on a small scale, of cypress shingles, has long been a favorite occupation of the negroes and poor white people living in the neighborhood of the Cypress swamps, and the total number made in this way is large, although it is practically impossible to collect anything like complete statistics of the product of industries carried on in homes. It would be safe, probably, to add, however, several millions to the figures published by the Southern Shingle Association. No statistics, unfortunately, of the amount of cypress lumber manufactured, are now available, but that it has greatly increased of late years there can be no doubt. Each year makes the value of this remarkable wood better known and more generally appreciated, and as white pine of the highest grades becomes more difficult to obtain, cypress must replace it at the north in many employments where a light, resinous, straight-grained and very durable wood is demanded. The supply of cypress is by no means inexhaustible. The swamps of the south and south-west still contain very considerable bodies of this tree (*Taxodium distichum*), although those in the most available positions and of the most convenient size for the mills, have already been cut along the principal streams and from the neighborhood of centres of population. It is true, too, that while the Cypress only grows in deep swamps, incapable of drainage, and therefore destined to be covered always with trees, that it is not reproducing itself very extensively anywhere, and that the Liquidambar and the Cotton-Gum are gradually replacing it. The value of the Cypress, too, as a timber tree, is seriously affected by a dry-rot, a species of *Dredalia*, which is especially destructive in the great bodies of this timber, which occupy the river-swamps of western Louisiana and the adjacent parts of Texas. It is evident, therefore, that the Cypress forests are not destined to take a prominent and lasting position in the timber supply of the Continent, and that they cannot be depended upon to furnish indefinitely, or even for any considerable time, their present output. The best substitute for southern cypress to be found in any considerable quantity in the American forests, is the wood of the so-called Red Cedar of the North-West Coast (*Thuja gigantea*). It is an enormous tree, widely distributed, generally near the coast, from northern California to Alaska, where, fortunately, it reproduces itself freely, and grows, while young, with astonishing rapidity in the moist climate of the region to which it is confined.

The trees in Boston, especially the Lindens upon the Common, were greatly disfigured during several years by the hairy caterpillar of the Tussock Moth (*Orgyia leucostigma*). It has done less injury during the past two or three years, although the leaves of some Horse-Chestnut trees in the Public Garden have been destroyed by it this season, but now the trunks of many of the trees on Commonwealth

Avenue and in the Public Gardens and Common are literally covered with the white hairy cocoons of this insect. Late in the present month or early in September the mature insects will emerge and the females will deposit their eggs upon the cocoons. Next season the caterpillar will hatch, and from present appearances, unless active measures are taken now to destroy them, there will be enough to devour every leaf upon every tree in the city. Now is the time to prevent this by destroying the cocoons, which can be done easily and quickly with a brush made of stiff wires or with a sharp-pointed stick. An industrious man or boy can destroy the cocoons upon the trunks of a large number of trees in a day, and the sooner industrious men and boys are set about it, the better.

House at Honmoku in Japan.

THE photograph from which our illustration (see page 319) was drawn seemed to us of especial interest as displaying a Japanese solution of a problem very similar to that which often confronts a builder on the rocky shores of New England, especially north of Cape Cod, and on the borders of many of our inland lakes. This problem is to place a country-house on a rugged shore to the best advantage, while preserving, as far as possible, the natural character of the spot. It is only of very recent years that it has been so much as considered in this country. We have been much too anxious to imitate, under wholly different conditions, the country homes of Europe, and, in particular, of England. We have wanted to surround our houses with green lawns, well-kept flower-beds and trees symmetrical in shape and planted in accordance with the supposed laws of landscape gardening as practiced in countries all parts of which have long been subjected to cultivation. And we have too often tried to secure all this in actual defiance of natural conditions, and at the sacrifice of natural beauties which, to a really cultivated eye, would have seemed of priceless value. We have too often sacrificed the chance for a beautiful, wide outlook over the water by placing the house so far from the brink that lawns and drives could encircle it; have cut away the native growth of tree and shrubs—rough and straggling, perhaps, but picturesque and precious for that very reason—and replaced them by nursery specimens; have planted gardeners' flowers in the stead of nature's beautiful wild products, and in the end, after a vast expenditure of time, pains and money, have succeeded in producing merely a bad imitation of an English villa, unattractive in itself, and utterly out of keeping with the landscape environing it.

Fortunately, tastes are changing, and one of the chief facts to be placed to the credit of the architectural profession in America to-day is the fact that it has developed a keen sense for the diverse natural beauties of our country, and an admirable power of adapting its constructions to the site and the surroundings at the moment in question. It is getting to be recognized as a binding æsthetic rule that a house shall conform itself to site and surroundings, and that these shall not be defaced to suit the character of a design abstractly evolved on paper, or tortured into the semblance of something which foreign hands had created under very different conditions. Many American homes exist, built within the last ten years, which are as worthy of praise from the point of view of appropriateness and picturesque charm as the Japanese house in our present picture. Some of them we hope to illustrate at a later day; but the Japanese house is meanwhile shown as evidence that the most thoroughly artistic nation of the modern world endorses the idea we are trying to explain. It will be noted that this house is placed quite at the edge of the cliff, so that the most extended possible view is obtained; that every tree which could be preserved in building it has been preserved; that the wild aspect of the spot has not been interfered with, and that the constructions of man, alike in the house itself, and in the fences, steps and

other surroundings, have been kept as simple and unobtrusive as possible. Picturesqueness is not the only quality to be prized, either in architectural or in gardening art; and it is a quality which, if forced into life where it does not naturally belong, is distressing to every cultivated eye. But when nature gives us picturesqueness in so clear and pronounced a form as here, the architect must accept her leading or ruin the effect both of her work and of his own. And spots quite as distinctively picturesque as this, and very similar in character, abound, as we have said, in many parts of our pine-grown, rocky coasts, and demand analogous architectural treatment. Naturally, to advise direct imitation of a Japanese house in America is no part of our desire, yet it may be said that the general architectural idea embodied in this house is far better fitted to adaptation in this country than most of those European models upon which we have so largely drawn in the past.

Foreign Correspondence.

London Letter.

THE finest Orchid which secured a certificate from the Royal Horticultural Society at its meeting on July 24th was *Cattleya Amesiana*, from Baron Schroeder's matchless collection, and probably the largest specimen in existence of this rare plant, it having been one of the gems in Mrs. Morgan's collection dispersed at New York some time since. It is a hybrid, raised five years ago by Messrs. Veitch, of Chelsea, between *Cattleya crispa* and *C. maxima*, and in growth it resembles most nearly the first named parent, the bulbs being stout and tall. The flowers are so strikingly like those of the superb *C. Exoniensis* that the difference between the two hybrids is not readily detected. The sepals and petals are broader than those of *C. crispa*, are less reflexed, and, instead of white, are of a delicate mauve tint. The labellum is broad and shallow, and exquisitely frilled at the margin. In color it is of the richest purple-crimson on the lower part, while the upper half is pure white, which serves to emphasize the intensity of the crimson. The specimen shown bore half a dozen spikes with three and four flowers on each, and therefore well deserved a cultural commendation.

Another exquisite little Orchid certificated was *Saccolabium celeste*, from Mr. B. S. Williams. Comparing it with the well-known *S. curvifolium*, it has the same thick, channeled leaves, strongly recurved and arranged in two ranks. The cylindrical flower spikes are about four inches long, quite erect, and consist of a crowd of small flowers with sky-blue sepals and petals and a lip of rich purple-blue. It reminds one of *Vanda cerulescens* in flower-color, and is quite unique in this respect in the genus *Saccolabium*. It is supposed to come from Moulmein and was first known under the name of *Rhynchostylis celestis*.

Anguloa Ruckeri alba, though certificated, did not get a unanimous vote, as some of the committee thought it no better than *A. uniflora* and *A. virginialis*, both white flowered species. The Albino does not differ from the original *A. Ruckeri*, except in absence of color, the flowers being quite as large and of pure ivory whiteness, very beautiful, as if carved out of alabaster. The powerful spicy odor of this *Anguloa* is objectionable to some persons, while others like it. *A. Ruckeri*, var. *retusa*, was also shown by Mr. Dorman, but it does not differ much from the typical form and is not nearly so fine a variety as *A. Ruckeri sanguinea*, with blood-red flowers. Messrs. Sander, of St. Albans, showed two new Orchids, both beautiful, but scarcely in condition to show their merits. One was *Bollea Wendlandiana*, quite a new species and distinct from others in color of the flowers. In growth, foliage, size and shape of flower it resembles the old *B. celestis*, but the color is a soft lemon yellow of various shades, with not a

trace of the plum-purple tint which characterizes most of the *Bolleas*. The other Orchid was *Lælia Eyermanniana*, supposed to be a natural hybrid between *L. majalis* and *L. autumnalis*. In bulb and leaf it resembles the former, but the flower is most like that of *L. autumnalis* in size, shape and color, which is a soft mauve-pink. A very marked feature of this novelty is the bracts, which, instead of being membranaceous, are leafy and green, and I know no other *Lælia* that has this peculiarity.

Among new green-house plants the most important was a variety of Javanese Rhododendron, with snow white blossoms as large and as fine in truss as any of the numerous hybrids which Messrs. Veitch have raised and exhibited of late years. There has been no lack of varieties with flowers of all shades of crimson, yellow and pink, but a white-flowered variety has long been sought for. Now we have it, and its value cannot possibly be overestimated, as a race of white-flowered green-house Rhododendrons, which will, in time, prove a great boon to those who have to supply a demand for white flowers, especially in winter, when these Rhododendrons naturally flower most abundantly, may now confidently be expected. This novelty is appropriately named Purity.

Two new Roses won certificates, a noteworthy fact, inasmuch as the committee are always cautious in certificating new Roses. One of these was shown by Messrs. W. Paul & Son, of Waltham Cross. It is named Duchess of Albany, and is a sport from *La France*, differing in no way from that favorite variety except in color, which, in the Duchess, is several shades deeper, while its petals preserve the characteristic curl which shows the paler pink inner surface and adds so much to the flower's beauty. The committee has now had flowers of it before them at consecutive meetings and they feel confident that it is a good Rose. The other new Rose was from the other Paul's of Cheshunt, and is named Paul's Cheshunt Scarlet. It was not put forward as an exhibition Rose, but merely as a garden Rose, and is chiefly remarkable for its intensity of color, the perfect shape of the flowers in advanced bud stage, the compact dwarf growth of the bush, and its floriferousness. The flowers shown certainly bore out all the points the raiser claims for this Rose, and I am acquainted with no other whose color so nearly approaches to a true brilliant scarlet. It is no doubt a seedling from one of the vivid scarlet Roses that have had their origin in the Cheshunt nurseries.

One of the most important exhibits of the meeting in the opinion of many was the new Japanese *Stuartia Pseudocamellia*, shown for the first time in bloom by Messrs. Veitch, from their nursery at Coombe Wood, where it has proved itself hardy as the North American representatives of the genus, *S. Virginica* and *S. pentagyna*. The Japanese is a good deal like the latter in flower, but most reminds one of the North American *Gordonia pubescens*. The leaves are lanceolate, acuminate, slightly toothed about four inches long. The flowers are produced from the leaf axils and are three inches across the outspread petals, but as these do not open widely the flowers look smaller than they are. The petals are broadly ovate, ivory-white and silky on the exterior faces and therefore shine like satin. The tufts of pale yellow stamens harmonizes beautifully with the warm white blossoms. The shrub is a very free flowerer, for the twigs shown, which were only a few inches in length, bore numerous flowers. The species is aptly named as the flowers remind one of a single Camellia, and the foliage is not unlike that of the Tea plant (*C. theifera*).

Three new Ferns received certificates, two being crested forms of British species. One was named *Lastrea montana ramo-coronatus* having the pinnæ ending in a dense crest, and the end of each frond also broadly crested. The other was a crested Hart's Tongue, *Scolopendrium vulgare cristatum*, and so dense is its crest that it looks like a tuft of the finest garnishing Parsley. Both are good varieties of hardy Ferns, but whether they are real acquisitions, considering the thousand and one crested forms we already have in cultivation, I cannot say. The

third certificated Fern was the pretty *Nothocheila Muelleri*, which has slender fronds a foot in length, with rounded, olive green pinnæ, covered with brownish scales.

London, July 24th.

W. Goldring.

Mr. Kimball's Orchids.

THROUGH the kindness of W. S. Kimball, Esq., hosts of visitors have been able to see a remarkable display of Orchid-flowers in his great collection, as many as 500 names having been registered on the visitors' book in a single day. At the time of our visit we found in the Cattleya-house an abundance of flowers, and suspended from the roof was a fine example of the beautiful *Catasetum Bungeoohii*, bearing on a stout spike, eight well-developed blossoms of ivory whiteness. It is really a lovely Orchid, and one of the finest introductions of late years. The sepals and petals measure five inches across, and the lip, which is broad and of wax-like substance, is beautifully undulated; the column is peculiarly constructed, standing out boldly, and breaking the flatness which the lip would otherwise present. In the same structure is the new and extremely rare *Spathoglottis Kimballiana* in its full beauty, the brilliant blossoms reminding one of a golden-yellow *Phalaenopsis*. The plant had two fine spikes, on which were thirty flowers, many of them fully open, and presenting a very showy appearance. Another Orchid, rarely met with in such perfection, was a well-grown *Oncidium Lanceanum*, with five large spikes, bearing, in the aggregate, 100 rich-colored flowers, and emitting a delightful perfume. A superior variety of this Orchid named *O. Lanceanum (Laurencianum)* was flowering. It differs from the ordinary form in the lip, which is of a deep violet with a pure white lobe, which makes it most effective. *Oncidium Janceriense* was at home in this house, judging from the handsome, many-flowered flowers panicles seen on the plant. Its chocolate and yellow flowers have a rare attractiveness.

The Cattleyas and Lælias were in vigorous growth, the enormous bulbs having produced quantities of well-developed blossoms in all the colors, ranging from pure white to the richest purple. A gem among them is a well-flowered plant of the rare *C. Schofieldiana*, with unusually large blossoms, the sepals and petals being of a pale yellow, densely spotted with rich crimson, and a white lip with numerous violet-purple lines. Several plants of the striking, scarlet-flowered *C. superba splendens* were in bloom, as were large specimens of *C. guttata Leopoldi*, with enormous, many-flowered stems; quantities of the easy-growing *C. Gaskelliana* were here in perfection, and many fine examples of *C. Dowiana* were displaying the yellow of their sepals and petals, and the purple and orange of their lips. *C. Mendelii* was bearing full-sized blossoms out of season, with many noble plants of *C. Mossia* and the pretty *C. bicolor*.

The Lælias in this house were represented by handsome specimens of *L. elegans*; the rare *L. Rothschildiana*, the free-blooming *L. marginata* and quantities of the winter-blooming *L. anceps* were already pushing their spikes for later bloom. A plant of *Calanthe veratrifolia* among the Cattleyas carried hundreds of pure white flowers above its dark green foliage. *Phajus bicolor* was flowering with some large specimens of *Anguloa Ruckeri*, with its blood-red blossoms and the golden-yellow flowers, *A. clowesii*, and near them was the old but rare *Oncidium micropogon*, with dull chocolate and yellow flowers on erect stems.

Dendrobium Jamesianum, *D. thyrsoflorum*, *D. Farmeri* and the pretty *Epidendrum patens*, with its many-flowered spikes, formed a very attractive group. Another chaste Dendrobium, of recent introduction, called *D. hercoglossum*, was conspicuous, with quantities of rosy-pink flowers the full length of its pseudo-bulbs. This is, perhaps, one of the finest of the genus. Several plants of the new *Odontoglossum Harryanum*, with enormous blossoms, showed great variations. In many instances the ground color of the sepals and petals were handsomely veined with golden yellow. *Brassavola verosa* and *B. lineata* displayed their creamy flowers to perfection.

The splendid masses of Cyripediums, for which this collection is so famous, enlivened the house with their quaint blossoms. Amongst others were a splendid example of the rare *Cyripedium Schroderæ*, with enormous flowers; a large plant of the beautiful *C. Curtisii*, the recently-introduced *C. bellatulum*, and very many more of the rarest and most beautiful species and varieties.

In the house set apart for Vanda cultivation several remarkable kinds were blooming, including *Vanda tricolor*, with its large, bold flowers; *V. suavis* and its variety, *Roelianii*, and the large rose-flowered *V. teres*. But the most promi-

nent plant in this house was the rare *Renanthera Storei*, with eighty-four expanded flowers. Its blossoms were exceedingly beautiful, of a brilliant scarlet, each individual flower measuring fully three inches in diameter. Other Renantheras were also in bloom, including *R. hystrix* and *R. matulina*, with its lovely orange and red flowers. Here, also, near the glass, was *Phalaenopsis Reichenbachiana*, a species rarely met with except in the most select collections. In shape the flower resembles *P. Sumatrana*, the sepals and petals being creamy yellow, barred and spotted with dull chocolate. Several full-flowered specimens of *P. violacea*, with highly-colored flowers, together with *P. grandiflora* and *P. Esmeralda*, were suspended from the roof. The Saccoboliums and *Arides* occupy the same house with the Vandas. Their stout, aerial roots were spreading in all directions, indicating that the proper treatment here is provided for them. A very handsome plant of Saccobolium (*S. Plumei Dayanam*), with its rich markings; and the old, free-blooming *Arides quinquevulnerum*, with its bright magenta purple markings were noticeable.

The *Odontoglossum* house was still very gay, the heat of the past few weeks having shown but little effect upon the plants, there being in flower several broad-petalled varieties of *O. Alexandra* and the yellow-flowered *O. Schleperianum*. Here, too, was *Oncidium Limminghei*, with its numerous chaste yellow and chocolate blossoms, and a grand plant of *O. serratum*, with a spike measuring some ten feet in length. Masdevallias were also represented by the curious *M. Chimera*, *M. Reichenbachiana* and others. One of the most interesting features connected with this vast collection is a splendid group of Orchids of purely botanical interest. Here their fortunate possessor has amassed an endless variety of the most curious and interesting species, many of them unique, procured from various parts of the globe.

In the large Water Lily house few Orchids were blooming except *Lalia anceps*, having expanded blossoms, probably owing to the house being closed to gain the temperature for the giant Water Lily, *Victoria Regia*, which was growing rapidly, and in the early part of September its enormous blooms are expected to open, when it promises to be well worthy of a visit. Some very fine Nymphaeas enlivened this structure with their charming flowers, including, amongst others, *N. Zanzibarensis*, *N. cœrulea*, *N. dentata*, *N. Devonensis* and *N. odorata*. Mr. George Savage, the energetic and successful gardener, has for some time adopted the use of glazed pans and pots for the Orchids entrusted to his care. It was very surprising to see the Dendrobiums and Cattleyas especially, with their numerous roots, clinging to the outer surface of the pots, clearly indicating that glazed pots are in no way injurious to the plants. It also economizes a great amount of time and labor, their neat, clean and healthy appearance leaving nothing to be desired.

Rochester, N. Y.

A. D.

New or Little Known Plants.

Erythronium Hendersoni.

PROBABLY the handsomest of all the Dog-toothed Violets is the recently-discovered Oregon species, which is here figured. While it is as graceful in habit as the common one, the bright and strongly colored flowers are more striking and attractive in their beauty. The petals have a very dark purple and somewhat blotched centre, which is surrounded by a band of yellow, and beyond this they are pale purple. The filaments are also purple, and the anthers are brownish. The flowers vary in number from a single one to three or four, usually quite large, with the petals, which are about one and a half inches long, more or less recurved, and becoming decidedly so with age. The leaves are mottled, as in most of the species.

Aside from the coloring of the flower, this species is characterized by the peculiar form of the appendages at the base of the inner petals. These appendages differ in form in different species of the genus, and in some are wholly wanting. Here the petal is very abruptly and almost hastately expanded above the very short claw, and the angles are thickened and somewhat saccate. Toward the median line there are two sub-globose, inflated appendages, which, with the filaments, almost close the orifice of the flower. The bases of the inner petals are so broad as to be nearly contiguous. The outer are narrowed

more gradually downward, and are wholly naked.

Another character to be noted is simple, club-shaped style, bearing a very shortly three-lobed and somewhat cup-shaped stigma. This character it has in common with two other species (*E. citrinum* and *E. Howellii*) of the same region, the common eastern *E. Americanum*, *E. propullans* of Minnesota, and an unnamed Texan species, otherwise much resembling *E. albidum*. All our other species have linear stigmas, including the eastern *E. albidum*, *E. purpurascens* and *E. Hartwegii* of the Sierra Nevada, and a confused group of several imperfectly known species common in the mountains from Montana and northern Colorado to the Pacific. These cannot be clearly defined until they have been carefully studied from living specimens. All are worthy of cultivation.

E. Hendersoni is a native of the mountains of south-western Oregon, where it was first collected in 1887 by Mr. L. F. Henderson, of Portland, and Mr. Thomas Howell, of Arthur, Oregon. S. W.

Cultural Department.

Cultivation of Native Ferns.—I.

IT is the purpose of this series of papers to consider the cultivation of native Ferns which are hardy or nearly so in the region about Boston.

The Ferns considered, embrace all those found in New England and therefore most of the species found in the Middle-Atlantic and North-eastern States. A few native species not found in New England are included, as they are of interest to the horticulturist and are nearly or quite hardy.

The only work on the cultivation of Ferns published in this country is an instructive little book by Mr. John Robinson, entitled "Ferns in their Homes and Ours" (1878). This book treats of the cultivation of Ferns indoors and out, their propagation, classification, life-history, etc. It contains references to the literature of the subject and lists of Ferns for special purposes. For descriptions and figures of native Ferns the reader is referred to Professor Daniel C. Eaton's magnificent quarto work in two volumes, entitled "The Ferns of North America" (1879-80). Both works are published by S. E. Cassino, Boston.*

The cultivation of hardy Ferns as a class, has received very little attention in this country. They are seldom grown at all, and very rarely in the variety and perfection which it is possible to obtain from this beautiful and fascinating group of plants. Some object to Ferns because they are flowerless plants. Most species do depend entirely on their foliage effects for their beauty; but these are so rich, so delicate, so varied, that Ferns may well be considered most desirable plants in a garden. The spring holds forth no greater charm for the lover of nature than the keen pleasure to be enjoyed from watching the unfolding crozier-like fronds of growing Ferns. Some are strong and woolly, soft to the touch, others are covered with chafy scales, the charm of which is irresistible, though difficult to describe; some again are smooth, some are green, others reddish-brown. Each kind is characteristic and has its own peculiar grace and beauty in the young as well as in the matured frond.

To the admirers of Ferns there is no need of upholding their desirable qualities for cultivation, but for the sake of those who are not familiar with them, a few may be mentioned. Ferns are excellent plants for filling up shady, dark and damp spots where other plants would utterly fail. Specimen plants make beautiful foliage effects. Clumps, carpets

*"Our Native Ferns and their Allies" is the title of an inexpensive book, with descriptions, but few figures, by Lucien M. Underwood, latest edition (1888). For New England species, "Fern Etchings," by the late John Williamson, is a desirable book. It is most beautifully illustrated by etchings executed by the author. Published in Louisville, Ky. (second edition, 1879), but now, it is believed, out of print. Neither of these works treats of cultivation. There are many works on British and European Ferns. Two small and desirable books to a cultivator are: (1) "British Ferns and their Allies," by Thomas Moore, George Routledge & Sons, London and New York. (2). "The Fern Garden," by Shirley Hibbard, Groombridge & Sons, London, 1870.



Fig. 50. —*Erythronium Hendersoni*.—See page 316.

or individuals, either by themselves or mixed with suitable flowering plants, especially herbaceous and native species, make most attractive features in a garden. Even the landscape gardener who seeks for large effects, cannot afford to ignore our native Ferns. Massive clumps of Ferns from two to five feet high or more, according to the species grown, may be easily obtained by good cultivation. The value of such clumps, often of truly sub-tropical effect, can hardly be exaggerated for such positions as the border of shrubberies and wooded locations.

It is popularly believed that Ferns are difficult to cultivate, requiring very special conditions and treatment. In the main this may be said to be entirely incorrect; a few kinds, which

are spoken of hereafter, require special treatment, and a few have resisted attempts to cultivate them successfully, but they are greatly in the minority. They are not only in the minority, but they comprise, for the most part, those species which are very small and unimportant to the general cultivator. Moderate sunshine is desirable for Ferns, provided it is not prolonged enough to dry up all moisture from the soil. A good, deep, moist loam, such as would be found on the north side of low buildings, fences or walls, or beneath the shade of trees that are not too absorptive of moisture, is a good place for a Fern border. In my garden the finest specimens get nearly full sunlight during the first half of the day. A six-foot board fence, as well as distant buildings and trees to the south, though not overhanging the Ferns at all, cast a shade on them in the middle of the day and in the afternoon, and help to retain moisture in the soil by shading adjacent ground.

Ferns are grateful for all the care that may be bestowed on them in the way of watering; but yet most species will do very well without it in favorable situations. The writer's Ferns, with the exception of delicate species in pots, are watered only occasionally in the hottest midsummer weather, as that attention is needed more by other plants. A border which has been under cultivation and well-enriched is the best for all but very delicate Ferns. Hardy Ferns are benefited by rich soil and thrive in borders which have been dressed for years with well-rotted manure. To copy nature is very well in attempting to cultivate plants that are difficult to grow or have resisted ordinary methods of handling, but no one should know better than a horticulturist that nature can be improved upon, and Ferns form no exception to the general rule. Give Ferns rich soil, good culture and old, well-rotted manure, or coarser manure as a top dressing in the autumn, and dug in in spring. They will respond kindly to such treatment, and well established specimens of many of the large species will become rich, luxuriant growing plants, which will compare favorably with the very finest specimens to be found growing naturally. As a winter covering for delicate Ferns in the open ground, salt marsh grass, straw or leaves may be used; for all the stronger ones, litters manure is desirable. Some Ferns, mostly the smaller and more delicate species, it is best to plant with peat or leaf mould about the roots. Such additions, though not necessary, would doubtless be advantageous to all species.

Besides those Ferns which are perfectly hardy, there are many species from the New England woods, as well as from our North-west and from Europe, which will thrive if they have an extra protection in winter, and which, on account of their beauty and interest, well repay this trouble. This protection is best given by having such species in a bed which can be covered by a cold-frame in winter. Cover late in the autumn after the ground has slightly frozen, and do not uncover except for occasional examination until the frame is entirely removed in early spring before the Ferns start. The kinds for which this and other special care is desirable will be noted in the discussion of species later.

It may be well to state what is meant by hardiness or want of it in the discussion of native Ferns. Those which live successfully in the open ground in this vicinity without any winter protection other than a slight covering, such as is commonly used for hardy, herbaceous plants, are considered hardy. There are other Ferns from warmer or more protected localities, or perhaps collected in the same locality with perfectly hardy species, which, as a matter of experience, are found to be not perfectly hardy. These either will not stand most winters, or a very severe winter, like the past one, will carry them off. The want of hardiness may be due to several causes. The first and most natural cause is that they need more warmth than our cold winters afford them in an unprotected garden. They may come from dense woods and shaded cliffs, where, naturally, a winter covering of snow protects them from the vicissitudes of changing temperature to which they are subjected in an open garden, or, again, they may be plants a little difficult to cultivate, which may be grown successfully, however, if only spared the trying period of our changeable New England winters. The summer heat is sometimes considered the cause of failure in cultivating plants, but with Ferns, if, in dry weather, sufficient water is supplied, this cause need not be considered.

Of course old Strawberry beds should not be allowed to mature a crop of weed seeds. But ploughing up the beds and replacing the old plants with new ones is generally better practice than any effort at cleaning them. Strong plants set now can be counted on for a good crop next year.

The Cultivation of Mushrooms.

OUR Mushroom-house is underground, eighty-three feet long, eight and a quarter feet wide and seven feet high. It is arched with brick, and heated by a Hitchings' base-burner boiler, and a four-inch hot water pipe along each side of the house. We endeavor to have Mushrooms from the end of October or first of November till the end of April, when maggots begin to infest the Mushrooms, and on this account, together with the warm weather, it is useless to attempt to grow them during the summer. As it takes about ten or twelve weeks from the time the manure is gathered till Mushrooms can reasonably be looked for, it is time to begin now in order to have them in November and December. In some seasons Mushrooms are quite plentiful in the pastures in September and October, but good natural crops are not always to be had, even in favorable pastures.

We use horse-manure, as fresh as can be got, and with the roughest part of the straw shaken out. Manure that has been well moistened in the stable or in the barn cellar is better than the dry manure removed from the stable every morning. Of this we have annual proof, as the best beds have always been made of manure that has accumulated in the cellar for a month before it was used. While manure from stables in which salt hay has been used for bedding should not be taken, I would use manure from stables where corn-husks, straw, hay or sawdust is used, but straw is preferable. Some growers prefer to use clean droppings, but I have never found this an advantage; some mix loam with the manure, but this has not been found of advantage here. Some books deprecate the use of manure from stables where carrots are fed, but this is nonsense, as carrots are fed here very liberally, and the manure from the carrot-fed stock raises excellent crops.

In preparing the manure, get together enough for a bed, say one-quarter or one-half cord, and have it all equally moist; if at all dry, do not hesitate to moisten it with water. Then throw it into a heap to ferment. In a few days, when the heat rises to about 120°, turn it over; at the same time shake it up loosely, and every day or two afterwards, for a couple of weeks or longer, turn it over again. The reason for turning it so often is to get rid of the rank heat, without letting the manure get "burned." When the temperature of the pile shows no tendency to rise above 120°, it is fit to use.

In private gardens there are often regular Mushroom houses, in which the beds are made upon the floor or on box shelves, one above the other, like berths in the cabin of a ship. But beds may be made in any dry cellar or shed, or under the benches in green-houses; almost anywhere, indeed, where they can be kept dry and temperately warm. Absolute darkness is not at all necessary, but shelter from windy draughts and shade from sunshine are necessary. The out-door cultivation of Mushrooms, practiced in Europe, is not practicable here as a rule.

The beds may be of any width or length convenient and about twelve inches deep. In making them, shake the manure loosely, so as to spread it evenly, then beat or tread it down very firmly. In a few days the heat will probably rise to 120° or 125°, but let it subside to 100° or thereabouts before planting the spawn.

We have used the English brick and French flake spawn; the English gives larger Mushrooms and the French whiter ones, but we prefer the bricks. When the bed is in proper condition for spawning, break up some brick-spawn into pieces about two inches square and plant these pieces into the surface of the bed, three inches deep, and in rows about nine inches apart each way. Then smooth over the surface of the bed and pack it firmly, as before. Some ten days after planting the spawn apply a coating of fresh loam one to two inches deep over the bed and beat it down smooth and firm. Endeavor to maintain a steady temperature of 60° day and night. A higher temperature may hasten the crop, a lower one retard it, but we have had, with a temperature of 160°, the best success.

Should the beds become dry, sprinkle them with tepid water, but do not give enough to soak through the soil and into the manure, or the water may rot the spawn. Ventilate very carefully, so long as the atmosphere is sweet, a little ventilation is needed. Never ventilate to reduce temperature. Avoid an over high artificial temperature; if it runs higher than 60° without fire-heat, ventilate to purify the atmosphere rather than to lower the temperature.

We gather the Mushrooms just as their gills are bursting; if not gathered until the heads are spread out they turn dark soon after being cut and are tougher and of poorer flavor than younger plants.

Robert A. Jackson

As a Mushroom bed will only last in good bearing condition for about three weeks, a succession of beds must be kept up in order to have a continuous crop. Many growers get a second crop from their beds, but I have always found it better to clear out the beds as soon as the first crop is over and replace them with new beds, than to depend upon the uncertainty of a second crop.

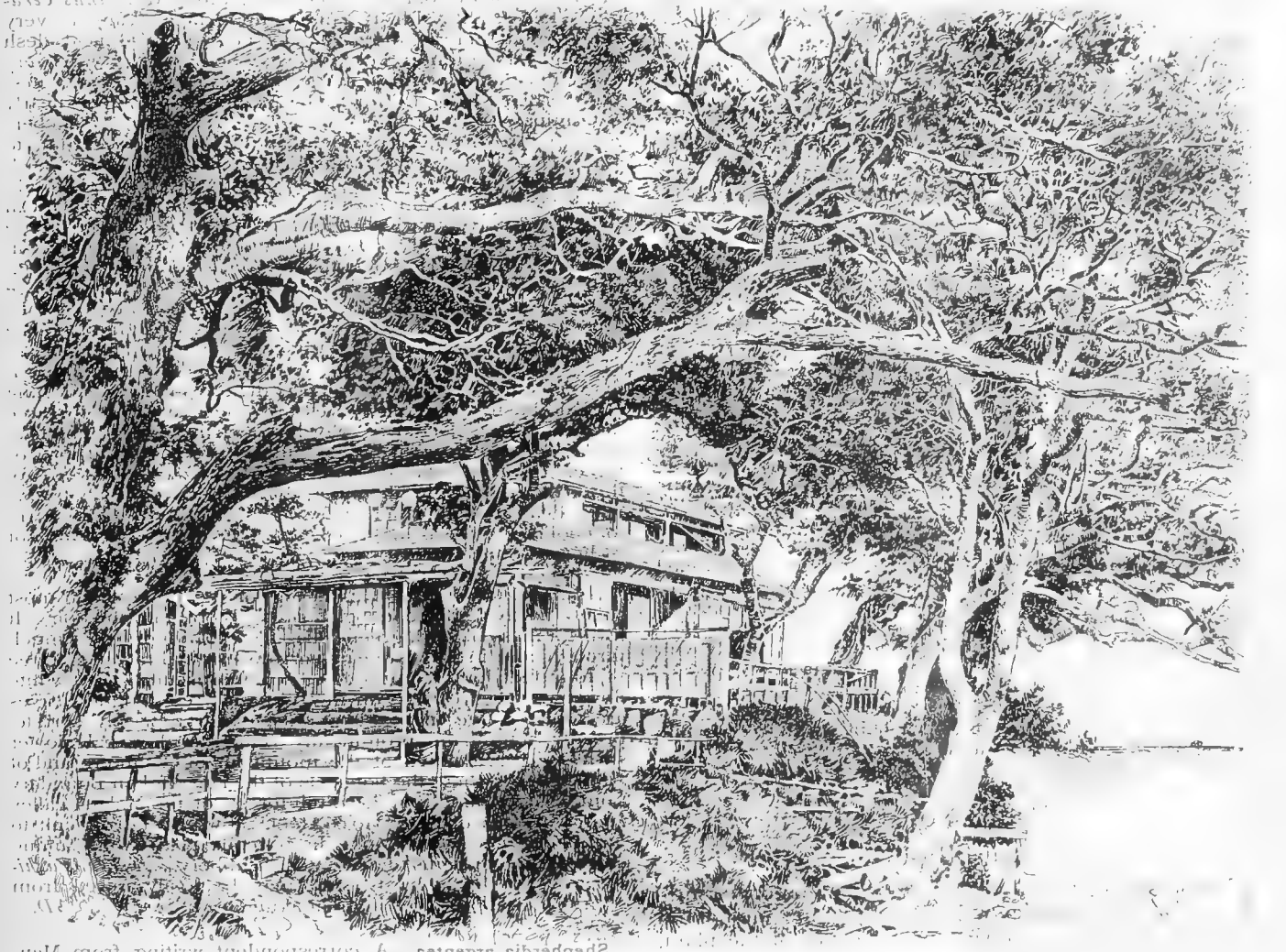
Wm. Falconer,
Glen Cove, L. I.

The Vegetable Garden.

An abundance of Lima and Snap Beans, Corn, Artichokes, Cauliflower, Spinach, Tomatoes, Lettuces, root crops and Melons, should now be found in every garden. And as the last sowings of Peas, Snap Beans, Corn, Carrots, Beets and Turnips have been made, and the late crops of Cabbage, Cauliflower and Celery planted, it is only necessary now to keep the ground clean and well stirred, and encourage growth as much as possible.

leaf maggot is usually very destructive in the fall, and I know of no remedy except a change of ground for the Spinach crop. The maggot generally appears in August or September and continues to infest the crop throughout the winter; during the late spring and summer months it disappears. About this time of year rabbits begin to be destructive to kitchen garden crops; they eat off newly planted Lettuces to the ground and the growing points out of the young Snap Beans; as a preventive, dust some soot or air slaked lime over the plants, when rabbits will not touch them.

Green-house Stages and Orchid Houses.—Mr. Hurnewell is reviewing the stages in several of his green-houses, replacing the old with new ones made of iron and cement. The side tables are of cement supported by T-iron along the centres of the houses the side-walls are of cement instead of brick, as is generally the case, and the stages for the plants are



House at Honmoku in Japan.—See page 314.
The young crops of Carrots and Beets by hand to about three inches in the rows and Turnips about four inches. Pull out and throw away all flowering plants of Carrots, Parsnips, Salsify and Scorzoneria. Lift Potatoes as soon as they are perfectly ripe and store them in small burlap bags in a cool, airy, but rather dark place. If the Onion crop has not been harvested attend to it as soon as it is ready. The white skinned Onions if dried out-of-doors assume a greenish color, but if dried indoors in a dry, airy shed, they retain their whiteness. Gather, cut and dry Okra pods for winter use; also young pods of Martynia and seeds of Nasturtiums for pickles. Plant Parsley in cold-frames for winter use, and thin the seedlings recently sown in frames. Put in a moderately large sowing of Spinach, using Viroflay or Thick-leaved. This sowing will give an abundance of fine leaves till November of later; the regular winter supply had better not be sown till the second or third week of September. The Spinach-

stair-step fashion and made of flat iron strips. These strips are about one and one-fourth inches wide, by one-fourth inch thick, in some cases set edgewise and about one or one and one-fourth inches apart, in others flat and about half an inch apart. While no doubt those set edgewise form the strongest stages still Mr. Harris the gardener, prefers those set flat, as they are strong enough for all ordinary purposes and much more easily painted. These stages, in the Orchid houses, have tanks of water under them both on the sides and centre of the house. The middle tank is of cement two or more feet deep, open at the top and extending all the way under the staging. A hot water pipe is also laid through it to warm the water and in this way increase evaporation. If needed Mr. Harris speaks in much praise of this plan, but some other skilled orchidists dislike it. There is a detached and deeper tank at one end of the house in which the warm water from the stage tank may be run for watering the plants.

The side tables of the cool Orchid house are of cement and trough-shaped above so as to hold a few inches deep of water. Over this a flat iron staging made of the same material as described above is laid and supported on iron rests, which are placed in the water so as to afford no chance for vermin, such as cockroaches, slugs or wood-lice, to get to the plants.

Mr. Ames' Orchid house stages are also of cement and iron, but there are no open water tanks or troughs under the plants; a coating of gravel is laid over the tables and kept moist. The luxuriant vigor of Mr. Ames' cool Orchids is a good indication of genial quarters. It is a very long, lean-to structure facing the north, nine feet high at the back, eight feet wide and four feet high in front. The pathway is three feet wide and alongside of the back wall, and the bench, which is five feet wide, is all on one level, in front. But as such a wide stage must necessarily be unhandy, recesses in the bench three feet wide by two feet deep occur, with eight feet intervals all along the pathway. The inside back wall is covered with netting to hold some sphagnum, and is kept a living carpet of dwarf Selaginella. The pathway is of cement. Ventilation is admitted all along the roof at the top, and in the front wall ventilators nine by fourteen inches occur at distances of twelve feet apart. The house is heated by steam with six rows of one and a half inch pipes under the bench. W. F.

Lenten Roses.—These are hybrids and varieties of species of Hellebore which bloom during April and May. They are far more satisfactory as hardy plants in America than Christmas Roses. A good, deep loam, partial shade, plenty of water during the growing season—April and May—and a covering of horse litter, for the purpose of protection in winter, is all they require. The flowering stem in *H. Ellebrus niger* is produced directly from the crown in the form of a one, rarely two, flowered, leafless scape. In the Lenten Roses the inflorescence is much branched; the secondary branches bear two or three flowers, and are always accompanied by almost stalkless, yet normal, leaves. The flowers are spreading, or campanulate, and vary in color from white to slaty purple, with sometimes a mixture of both, and prettily spotted. Propagation is by division, which should always be done in spring; or by seeds, sown as soon as ripe, and kept over in a cool frame to be brought into the green-house to germinate in spring. Some of the best are *H. atrorubus*, *H. Caucasicus punctatus*, *H. Colchicus*, *H. Olympicus*, *H. orientalis* and its varieties, many of which are sold under specific titles, such as, *H. orientales antiquorum*, one of the best, with flowers white, softly toned with pink and gray; *H. orientales guttatus*, white, and one of the earliest and best for cutting, being quite equal in beauty to a Christmas Rose, but not lasting so long when cut. The hybrids raised by F. C. Heinemann and others are mostly with *H. orientalis*, the seed-bearing parent and the foregoing species. The best are: Albin Otto, Commissioners Benary, F. C. Heinemann, Hofgärten, Inspector Hartweg and Willy Schmidt, the latter being robust in habit, with pure white flowers, which should make it valuable to the trade.

T. D. Hatfield.

Plant Notes.

Primula Rusbyi.

THE inquiry of an English correspondent concerning the habitat of this new Primrose prompts me to send to GARDEN AND FOREST a note on the beauty of the plant, its discovery and habitat.

Early on the morning of the 4th of May, 1881, I had left my camp at the end of a wagon road in one of the cañons of the base of the Santa Rita Mountains of southern Arizona, had mounted successive heights—the grassy slopes covered with a sparse growth of Oaks and Arbutus, the breezy ridges crowned with Pines, and the more difficult steeps dark with the Douglas Spruce—and was clambering painfully up the long, bare crest of Mount Wrightson, the monarch of that mountain group, when I was reanimated by the exclamations of delight of my young assistant, then a little in advance, over the prettiest flower he had yet seen in Arizona, as he declared. I found it to be a Primula. It was much smaller than *P. Parryi* of the mountains of Colorado, but so nearly answering to the description of that species, that I puzzled over it, as I collected it again and again on those summits, trying to learn if it was really distinct, until Mr. Greene named it and described it from

specimens collected by Mr. Rusby in New Mexico in August following.

Its habitat is the meagre soil of bare ledges and the verge and shelves of cliffs of summits of 7,000 to 10,000 feet elevation. Its range from the mountains about Clifton, New Mexico, southward along the Cordilleras certainly as far as 200 miles beyond the boundary.

The beauty of this Primula must make it a choice addition to the list of plants for rockeries, etc., and the fact that along the northern limits of its distribution it must be exposed to much freezing is a guarantee of its hardiness.

The "Sour" or "Pie Cherry," is a conspicuous object during the last weeks of July in central and northern New Hampshire, where a farm house is rarely seen without a clump of this low spreading tree or bush along the garden walls. It is a variety of the old Morello Cherry, a form of *Prunus Cerasus*. The bright red fruit hanging upon long stems is very ornamental and as the birds do not relish its acid flesh it hangs a long time. Formerly the Sour Cherry was very generally cultivated through the Middle and Northern States, but the Black Knot, to which this plant is subject, has nearly exterminated it, in spite of its habit of spreading by suckers which it throws up vigorously in all directions. According to Darlington, it had almost entirely disappeared from Pennsylvania early in the century, and it is now unknown in southern New England, although it was a common garden plant in that part of the country thirty or forty years ago. In the prairie states, too, it has had to succumb, and it is now apparently in northern New England only that this once common and familiar plant can be seen in this country. The New Hampshire plants are sometimes infested with the Black Knot, but they are often quite free from it; and there is every appearance that they will survive there many years longer. The Morello Cherry is sometimes ten or even twenty feet high, with slender, graceful branches, spreading out horizontally and forming a round bushy top. The leaves are one and a half to three inches long, on slender petioles rarely an inch long. The fruit stalks are usually solitary, sometimes in fascicles of two or three. The fruit is fleshy, acid, rarely more than a half or two-thirds of an inch in diameter, bright red or nearly purple when dead ripe. Formerly this was considered the best Cherry for cooking, and was highly esteemed in the manufacture of "Cherry Bounce." S.

Aralia Cashimera.—This is one of the noblest and most stately hardy herbaceous plants of recent introduction. It forms a mass of dark green foliage, six feet high by as much through, and in August bears narrow terminal racemes, three or four feet long, composed of numerous umbels of white flowers. The leaflets of the immense compound leaves are four or five inches long, hispidulous, sharply serrate, broadly acuminate, prominently veined, with a pale lower surface. It is a native of the mountains of Cashmere and of Afghanistan, where the botanists of the late Afghan Boundary Commission found it in the Birch forests of the Malana valley at an elevation of nearly 10,000 feet. It would be difficult to find a better subject among herbaceous plants for planting singly on the margins of a lawn or shrubbery. *Aralia Cashimera* is perfectly hardy, and may be easily raised from seed, which it produces in great abundance. D.

Shepherdia argentea.—A correspondent writing from Mandan, in Dakota, calls attention to the probable value of this plant, the Bull Berry of the settlers in the upper Missouri valley, for hedges in the severe climate of the northern plains. "The *Shepherdia* grows on the Missouri bottoms, where it is sometimes overflowed, and where it reaches a height of twenty-five feet and is somewhat diffuse; it is most abundant on the steep bluffs of streams where there is not much grass, but it appears also on the summits of some of the highest and driest buttes in this vicinity, where it is short and compact. It seems to grow slowly. Isolated clumps of these bushes are beautiful. The red berries are gathered and used for food by Indians and by whites, and are said to make good jelly." The *Shepherdia* is hardy at the east, and, when covered with its bright red fruit, extremely ornamental.

A New Rose.—In the report of the July meeting of the Belgian Botanical Society, M. Crépin gives a full account of a supposed very fine new species of Tea Rose, which has been discovered by General Collett on the mountains between Birmah and Siam. It has a pure white flower, five inches in diameter,

and differs from the common *Rosa chinensis*, Jacq. (*R. indica*, Auct.) by its single-flowered inflorescence, entire outer sepals, unarmed floriferous axis, and very large flower. It may prove to be an extreme variety of *R. chinensis*, but at any rate cultivators should look after it. It is fully described in M. Crépin's paper under the name of *Rosa gigantea*, Collett MSS.—*Gardeners' Chronicle*.

The Florists' Convention.

Extracts from Papers Read.

FROM THE PRESIDENT'S ADDRESS.

"What we need, and what our profession demands, is a training school for our children and the young men who are to follow in our footsteps, where shall be taught a scientific and technical knowledge of the things pertaining to plant life and plant growth, in their relations to soil, and heat, and water. Our need, and the need of the young men who are to follow, is such an education as will enable us to analyze soils, and to know, scientifically, their constituent parts, and their relation to the fibre and tissue of a plant; to be able to detect deleterious and injurious substances, to check and control the chemical action in soils, to adjust to a nicety the proportions of heat, food and water. Our most successful men are often confounded and amazed at their own failures, and can seldom assign an intelligent reason for the same. Often in the same house, under apparently similar conditions, with the same kind of soil, failure attends, where, in former years, was had abundant success. Instances of this kind abound on every hand, and we are all familiar with them. This need not be, for with a right education and proper training—such as I hope awaits the young men of the future—these problems, so serious and difficult to ourselves, will, to them, disappear as the dew before the morning sun. This knowledge, so desirable and important, can only be imparted by specialists and teachers devoted to such work. Industrial and scientific education is making remarkable progress the world over, and we, who have the good of the profession at heart, must see to it that it is kept abreast of the times. With all our boasted achievements in plant growing and flower production, the fact remains that it has been wrought out by an enormous waste of time and physical force. How to correct this, is the question uppermost in the minds of many thoughtful florists.

"Mr. Thorpe, in his address to you at Philadelphia, expressed a desire that at no distant date there might be established a National Experimental Garden; if to that could be united a school for the special training of persons for our vocation, where a practical and scientific education would be imparted, such an institution would prove of incalculable benefit to every member of the trade."

Mr. Hill suggested, as an incentive to experiments in hybridizing, that the Society should offer liberal prizes for new plants of American origin, and closed with some sound advice on commercial integrity, from which we quote:

"Those desiring the good of the profession, and who have its welfare at heart, have entered solemn protest against the dissemination of plants under false names. This abuse, which has grown out of avarice and a lack of moral principle, must be checked. We must not, we cannot afford to pass this matter by; the fact remains that the most unblushing frauds have been perpetrated on an over-confident public. Commercial probity, uprightness in our dealings with our patrons, is one of the things this Society must insist upon, until this blight which has fastened itself upon our calling is eliminated and destroyed. There must be no uncertain sound issue from this body of men on this particular subject.

"The renaming of plants must not be overlooked. We must hold inviolate and sacred the right of any man or woman to name the plant through whose skill, patience and care it has been produced; and not only that, but we must, by the moral force of this Society, render secure his or her right and title in the same forever. No one has the right, either through caprice or malice, to change or attach any other name save that given it by its disseminator.

"Another suggestion in connection with this subject may with propriety be referred to. Where the translated name from a foreign tongue is used, the original should follow in parenthesis. I question the expediency of using translations, but if it must be done, it is only right and proper that the original shall follow. To do this will certainly allay suspicion, and would prevent the unsuspecting from making duplicate purchases."

ROSES FROM THE GROWER'S STANDPOINT.

This was the subject of a paper by Mr. Edwin Lonsdale, of Philadelphia.—After stating that the first essential in the case was that the Rose could be profitably produced, the speaker discussed at length the value of different varieties:

"Bon Silene is a very old favorite, and is still one of the most profitable varieties in many localities. Its fresh pink color and ideal shape commends it to all flower lovers, and its productiveness will keep it on the list for some time to come. The day has gone by for high prices, of course, but it will continue in steady demand.

"Catharine Mermet commands the admiration of every one who sees it. Its delicate coloring, delicious fragrance and exquisite form has made it a deserved favorite. Unfortunately, not all of us can grow it profitably. Many admit that they are compelled to grow it, but it does not pay. It requires special treatment to bring out its paying qualities; and is very much inclined to run to blind wood if grown in too light a soil. It prefers a rather stiff, though porous, soil, for no Rose is more impatient of excessive moisture at the roots, and a night temperature of not higher than fifty-five degrees produces the finest flowers.

"The Bride is a sport from the last named variety, being identical with it, excepting in color, which is white. It has established itself as one of the best white Roses we have. Of course it does not compare with the Puritan when at its best, nor with Niphetos for productiveness; but it can generally be depended upon to bring a fair price when delivered in good condition. It has almost entirely displaced Cornelia Cook, and will hold its own for some time to come.

"Niphetos, it has been said, will be grown when all the white Roses now in cultivation have been forgotten. This is perhaps going a little too far; but it goes to show in what esteem this Rose is held, either by itself in a bouquet, or in "set" pieces, for which purpose no Rose is better adapted. For productiveness, taking quality through the crop, I think it leads them all.

"Much was hoped from the Puritan; and these hopes had some foundation; but, alas! experience has demonstrated that the majority of the many buds formed produce imperfect blooms. After the experience of last winter, it cannot be placed on the list of Roses likely to prove profitable.

"The advent of the now somewhat old and famous Perle des Jardins marked a new era in Rose culture. Hitherto Safrano and Isabella Sprunt were the standard sorts grown, with Bon Silene. Maréchal Neil was only grown in a few localities, but the Perle was accorded a place in every establishment, and it caused many florists to turn their attention to Rose growing. It will be a long time before the Perle is superseded, and, for general purposes, it remains one of the best we have. However, it is true that some of our very best growers do not find it profitable, because of so many flowers coming malformed. It is believed by some florists to require a more porous soil than most varieties do, and a night temperature of from 60° to 65°.

"Sunset is a sport from the last named and requires the same treatment. It has entirely superseded Safrano, and its offspring, Ned Falcot, and is likely to be more popular in the future than it has been in the past.

"Papa Gontier has not been in general cultivation sufficiently long for all growers to learn its requirements thoroughly, or to bring out its good qualities. That it has established itself as a favorite amongst flower buyers there is no doubt. Its long stems and good foliage would give it high rank, even if its fine color were not so desirable. The tendency to lose its leaves in winter, however, is against it, and if this tendency can be overcome it must be considered a first-class variety.

"Souvenir d'un Ami is another very old Rose and never much of a favorite as a cut flower. Its popularity is evidently on the wane in New York, possibly because of the preference for larger Roses.

"La France bounded in popular favor suddenly as a winter bloomer. Its adaptability for forcing must have been discovered about the time Mr. Bennett's Hybrid Teas were introduced, to which class La France undoubtedly belongs. It is a great favorite with all flower lovers, and, generally speaking, profitable to the grower. More than a dozen florists have told me that it has been the best paying Rose they grew. La France, and, in fact, all Hybrid Teas, under which head may be classified Duke of Connaught, William F. Bennett, Countess of Pembroke and a few others, are more susceptible to the attacks of Black Spot than the true Teas are. As a preventive of this, avoid too much moisture during cool weather. The fall months, before it is thought time to start a fire, are the worst for this class of Roses.

"No Rose ever created so much attention in this country as the William F. Bennett. The high price paid for half the stock, and the peculiar restriction placed upon it, aided in whetting the appetite of all florists, especially when its color and form were known. It has been one of the most valuable Roses introduced into our list of winter blooming sorts for a number of years. The \$5,000 paid for the Rose proved to be a good advertisement, and few of those who invested in it when first distributed ever had cause for regret. It is a hard Rose to get started on account of its free blooming tendency, but by persistent disbudding, when planted no more than three or four inches deep in rich, light soil, on a well-drained table, it is one of the most profitable varieties grown. It requires more heat than most of the Teas, and seems to improve in constitution every year.

"Madame Cuisin has had a hard struggle to gain the recognition to which it is entitled. It is a distinct type from the class generally in use for cut flowers in winter, being somewhat short in petal, and if cut too soon it has a diminutive appearance; but when allowed to get two-thirds open, at which time it is at its best, it has the appearance, to those unacquainted with it, of being ready to drop. It is, however, one of the best varieties for keeping in the whole list.

"Mademoiselle de Watteville belongs to the same class, but it is larger, and lighter in color. It is sometimes called the Tulip Rose, because the edges of the petals are tipped with a darker shade of pink. It has been planted quite extensively for the New York market, but whether it will prove a wise investment or not remains to be seen.

"American Beauty is perhaps the most remarkable Rose on the list. A Rose of its size, form and fragrance, and at the same time a perpetual bloomer, is indeed a great stride onward. Some may feel that it is more of a boon to the retailers than to the grower; certain it is that good flowers of it would never sell at wholesale for less than \$25 per hundred so long as the fires are going. It was introduced to the American public just when the large Hybrid Perpetual Roses had become fashionable, and flower buyers wanted them at all seasons of the year. American Beauty has relieved the retailers from all anxiety, for it is obtainable from January to September. A houseful of these plants, when doing well, is a splendid sight; their large, finely formed, sweet-scented, pink Roses, borne on shoots several feet high, would make even its severe European critics change their tone. It is easy to understand why it is condemned over the sea, because it is useless out-of-doors even here, and in winter time under glass, in that sunless climate, it could not open its blossoms with any degree of satisfaction. It seems to do equally well in solid beds and tables. It will stand much heat and moisture when in good health, and seems to do better the third year after planting out than the first. The plan of bending down the strong shoots seems to be the best for this Rose. It causes flowering shoots to break from the base, which generally produce fine blooms."

FROM THE ESSAY OF MR. H. H. BATTLES.

"Every person engaged in growing plants should know the first principles, at least, in botany. Last winter, while talking to a grower who had been in business all his life, as had his father before him, I asked him a few questions about hybridizing, thinking I would try to instruct myself by getting some good, practical ideas. He said "he did not take much stock in it, and thought it better to let Nature take its course and let them cross themselves." It occurred to me that an argument like this was on a par with advising faith cure to a disabled man when the most skilled and advanced surgical operation was necessary. Darwin was hardly of this gentleman's way of thinking; he made a great many experiments in hybridizing; he speaks of the seventh generation of plants, and crossing them when grown under different conditions; of the struggle for existence among them, the effect of climate on reproduction, the sleep of the plants, self-production during sleep, the influence of gravitation upon them, the power of digestion, their movements in relation to their wants and the diverse means by which they gain their subsistence. A great many of the subjects seem to be of no practical use, but putting our minds in this channel is what elevates, not only ourselves, but those with whom we come in contact, and in order to do this we must first become interested in botany. On this subject there is no better teacher than the late Professor Asa Gray, whom, it is said, no one has ever yet approached, in the rare art of making purely scientific theories and dry details popular and interesting. From his charming elementary work, "How Plants Grow," to his more elaborate "Manual," there is one simple, concise, and yet exhaustive, method of treating the

various grades of the science. Flowery rhetoric, beautiful figures, lofty speculations and romantic fancies are discarded, and in their place is a simplicity of statement, a transparency of language and an enthusiasm which lights up every page. The leading scientific men of this country and Europe have awarded the highest place in the galaxy of botanists to Professor Gray.

Now, for the dealer to know the habits and requirements of plants would be very useful and interesting; but there are other subjects which demand his attention first. He comes directly in contact with consumers, not only caters to their wants, but stimulates the demand for flowers by the judicious handling of them. Surrounded by the most beautiful colors, the most exquisite forms, and the most delicious fragrance in nature, one of the first thoughts of the dealer should be the artistic arrangement of flowers. Taste, to a very great degree, is a matter of education, and the study of color, form and position should be carefully considered; the knowledge of a few of the laws of color are absolutely essential to the intelligent arrangement of flowers."

After stating the laws to be observed in the proper mingling of various colors, Mr. Battles gave several rules for practice, like the following: "If you have a blue vase, use orange tints, if a green one, use red. If you are obliged to use flowers that do not harmonize, separate and relieve them with white ones. Be careful of reds, which are the most trying colors. It is not unusual to see an expensive design or basket in which is some choice tone of red, say a Jacqueminot Rose, where the effect is entirely destroyed by a few red Carnations or Bouvardia, which would have been much better thrown away than put into the design.

"The study of color is a beautiful and interesting one and does not lack text-books; the subject is exhaustively treated by Chevreul, 'On Color,' who is at the head of Gobelin's Tapestry works, and has made this subject a life study; also in G. Field's 'Chromatograph,' which has been modernized by J. S. Taylor, London. There is a delightful book on color, too, by A. H. Church."

THE CULTIVATION OF PALMS.

Mr. C. D. Ball, of Holmesburg, Pa., read a paper on "Ferns, Palms, and Decorative Plants," from which we take the following:

"Nearly all Palms are propagated from imported seeds, which, if obtained fresh, are not difficult to germinate. Orders should be placed early enough to insure getting new crops as soon as possible after being gathered. Some varieties soon lose their vitality, and the sooner they are planted after being received the more likelihood there will be of good results. In sowing I use five or six inch pots, filling them about one-third full of broken pot or charcoal for drainage. The soil used should be a mixture of about equal parts finely-sifted peat and loam, to which a little sand is added. The seeds can be planted thickly, almost touching each other. They should be covered with from half an inch to an inch deep, according to the kind and size of seeds, and the surface pressed firm and smooth. Then plunge the pots to the rim in cocoa-fibre in a warm house, where a fair bottom heat can be maintained. The soil should be kept always moist, but not wet, or the seeds are likely to decay before they germinate. By plunging the pots in the manner recommended it can be kept in this condition without frequent watering.

"The time required to germinate varies under different conditions and with different varieties. Some kinds, such as *Areca lutescens*, *Latania Borbonica*, *Cocos Weddeliana*, etc., usually take from one to two months before the growth shows above the surface. The young plants should not be potted off too soon; it is better to leave them until they are thoroughly rooted and the tops are well up. *Areca lutescens*, *Kentias* and some others of this type should be left until the second leaf appears. When ready they should be potted off into as small-sized pots as will contain the roots without injury. A two or three inch rose-pot I prefer, on account of the long, stiff roots made. The soil should be about the same as that used for the seeds. After potting they should be placed in a close, warm house. Yet great care must be taken in watering; the roots and foliage are tender, and easily damped off if kept too wet. The best plan is to plunge the pots in cocoa-fibre, fine ashes or something similar. A more even temperature can be maintained at the roots and the soil can be kept moist without frequent watering. A little bottom heat is of great help to the plants until they have become established.

"The second shift should not be made until they are well rooted through and somewhat pot-bound, and then to the

next sized pot only, using about the same kind of soil as before, although it is best not to sift it now. The larger pieces can be chopped up sufficiently fine to use, as Palms like open, fibrous soil. At the next shift, and from that time on, I lessen the quantity of peat to about one-third part, and add a small portion of fine, well-rotted cow manure for all the stronger rooting varieties. With most of the more rapid growing varieties the plant will now have reached the four-inch pot stage. This can be attained by proper handling in about one year from the time they were taken from the seed-pots. From now on the same precautions should be taken not to over-pot or over-water at the roots. Good drainage in the pots is always essential as the soil must be kept pure and well drained. While growing, all Palms require frequent syringing over the foliage, especially during the spring and summer months. In winter little or no growth is made and water should not be applied so liberally. About the middle of February they should be thoroughly overhauled, as this is the time they will want to move forward again. Those requiring more pot room should be shifted into a pot a size larger; very often, however, it is better to shake the old soil out and repot into the same sized pot if it is found that the roots are not perfectly healthy and there are not plenty of them. Care should be taken at every potting that no part of the stem be buried. The plant-base must merely rest on the surface of the soil. The roots should never be cut, as with some varieties it might prove very disastrous.

"During the spring and summer the growth of the year should be made, and shifting on should be done, whenever required, before fall. Plenty of moisture and heat is necessary to get a good growth, and syringing, once or twice a day, and water thrown on the paths on hot, sunny days is advisable. Sufficient ventilation should not be overlooked, as pure air is essential. Even during the summer it is often well to keep the fires going slowly, to maintain an even temperature. The houses should be kept well shaded, as Palms will not stand the full sunlight. The foliage is easily affected. A few applications of manure water during the summer will be very beneficial with most varieties.

"If wanted for fall sales they should be hardened off before that time by gradually lowering the temperature and admitting air more freely; it would not do to send them out in a soft condition."

NOMENCLATURE.

The purpose of this paper, prepared by Mr. R. J. Halliday, of Baltimore, was not to correct the botanical names of plants, but to enforce the advantages of uniform names of plants in trade.

"My idea," said Mr. Halliday, "is to correct floral nomenclature, and to abolish the high-sounding names which are bestowed on plants, so that we can understandingly buy from and sell to each other. The best way to accomplish this, I believe, would be to appoint a committee of twelve reliable men to classify and regulate nomenclature. The committee would do much towards removing existing abuses—fixing correct names in place of misleading ones. In catalogues and classifications the scientific, as well as the popular name of a flower, should be given on all occasions. The omission has been the source of much annoyance. Suppose we have a Fuchsia named *Souvenir de Prince Albert*, imported from France, under this florist's name. Some one, not satisfied with the name, changes it to *Babbling Brook*, in order to have something different from his brother florists. Is not the public deceived by such a course? *Heliotrope Madame Blomage*, imported from Europe and here re-named *Snow Wreath*, was ordered back by Cannell, of Swanley, England, who had it already under its proper name. He was so angry with us for our Yankee trick, having the plant in abundance, that he named it *White Lady*, and not a few American florists paid a fancy price for it under the latter name, although, by this time, it had become well known and cheap in this country under two other names. There are many cases similar to this. What is the proper name for *rose Ball of Snow*—is it an American Seedling, or is it *Boule de Neige*, of French origin? If the latter, I would like to catalogue it with both names, one in italics, as many persons believe this to be a new Rose. French growers say, Only one of our Yankee tricks! We do not want a bad reputation abroad. Is the *Geranium White Swan* an American seedling, or is it *La Cygne*, which I imported two years ago? If the latter, would not your committee recommend catalogues to give the French and English name in brackets?

"To remedy this, as I have said, a committee of twelve men,

of whom nine should agree before a verdict is formed, would be a step in the right direction. The beginner in the business wants authority for what he sees displayed in our catalogues and heralded over the country in magazines and newspapers. We want fewer names and more distinct kinds. Catalogues are becoming a jumble and a reduction is needed in plant names. Every florist should have the right to name his own seedling; this right should be preserved and no one allowed to re-name it and place it on the market under any other appellation. This Committee of Nomenclature which I propose should be empowered to pass on lists of plants submitted by members of the association at its annual meeting. Such species and varieties as in its judgment are entitled to the approval of the Association, should be recommended when at least nine of the members concur, and the list should be official upon approval by a majority vote of the members present at any general meeting. It should also be the duty of the committee to declare, when the same plant is sold under different names, which name shall be adopted; to make lists of Roses and other plants that are identical, although they have been known under several names, and to settle all questions brought before it as to the correct names of plants, where the name may be questioned or a dispute arise."

Convention Notes.

In his address of welcome, Mr. John N. May gave the following graphic illustration of the growth of the trade in florists in this city: "About the year 1840 Isaac Buchanan, who is still in active business, carried daily his available stock in a large basket, to be sold at what is now the head of Wall Street, and he then considered it a good day's trade to take in two dollars, while three dollars was an extra large sum for one day's sales. As late as the year 1871 two members of the firm of Pennock Bros., of Philadelphia, then, as now, the leading cut flower dealers of that city, came to New York in search of rosebuds for the Assembly ball, and, after spending three days here and visiting all the principal growers, returned with fifty-nine buds. Contrast that fact with the trade now, when the daily average of rosebuds sent to this city amounts to over 30,000, and when, instead of plants being brought to New York in baskets, more than one hundred large wagon loads are sent every market day, in the spring, to the West Street market alone, not to speak of the supply at the innumerable stands dotted all over the city."

Mr. Charles T. Starr, of Avondale, Pennsylvania, said: "Among Carnations I consider the *Century* and *Portia* the best red varieties; *Grace Wilder* leads in pink; *Buttercup* is still by far the best yellow, though several others have their strong claims, and may do best in some sections. *Chester Bride* is the finest of variegated colors, of decided character for that class, and among the white kinds we use *Kinzie's*, as the finest of late ones. Peter Henderson does well when old or early propagated plants are used, and *Snowden* when grown from cuttings made from the ends of the blooming stalks, just before they show bud. The new white called *William Swayne* seems to combine the good qualities of the two last named, and promises to be the finest white, for this section at least. Soil seems to exert such an influence on the growing of Carnations, as also does the construction of forcing-houses to bloom them in, that it will be very difficult to make a list that would suit all circumstances. Judicious experience is the only safe guide."

Mr. Benjamin Gray, of Malden, Massachusetts, said it was a happy coincidence that the kinds of Orchids profitable for florists' use are all of easy cultivation. The best sorts, easily obtainable, are *Lalia autumnalis* and *S. albida*, *Cattleya Trianae*, *Cologne cristata*, *Calanthe Veitchi*, *C. vestita rubra* and *C. vestita lutea*, *Dendrobium nobile* and *D. Wardianum*. If to these we add *Cypripedium insigne*, *C. Harrisianum*, *C. villosum* and *C. Spicerianum*, *Cattleya Bowringiana* and *Odontoglossum Alexandrae* we have a list which will give us succession of bloom from November until March, the season during which Orchid flowers are in greatest demand. The kinds named may all be grown in the same house, with the exception of the *Calanthes* and *Dendrobiums*, which require a high temperature, with plenty of water while growing, and should be kept cool, with enough water to prevent them from shriveling while at rest and until the buds are formed, when they may be brought into the house with the others, a few at a time, for succession of bloom.

In reply to the question whether propagation from blind shoots had a tendency to render plants less floriferous, Mr. James Pentland, of Baltimore, replied, "Emphatically, no, and

this after an experience of fifty years." Mr. J. N. May added, that in a recent test, he had propagated 300 plants—Catharine Mermet Roses—from blooming shoots, which were the finest and strongest he could find in his house, and also 300 plants from what is usually termed "blind wood." He continued: "Do not understand that this wood was taken from little weak shoots. It was taken from good, firm wood, with healthy foliage. As a result, I have failed to see a particle of difference in the produce of these plants. I am convinced that, so long as we propagate from good, sound wood, whether it be blind or blooming, we will get as good a plant in the one instance as in the other."

Here are a few sentences from the address of Mr. Battles which florists should remember: "When a gentleman wishes to send a very large and expensive bouquet, the salesman should advise sending the flowers loose in a box (which can be arranged prettily), that the lady may select the ones she wishes to wear. . . . A practice which is not quite extinct, is that of making handles on corsage bouquets, and covering them with tin foil; the sooner this is done away with, the better. . . . How many people have very unhappy recollections of funerals where they have been surrounded by ghastly designs and stifling odors. . . . Lettering on designs has been greatly overdone. I would advise strongly against it; often customers insist, but, if left to your taste, decide against it."

"Three years ago," said Mr. Robert Craig, "the *Latania Borbonica*, in six-inch pots, found tardy sale, in New York and Philadelphia, at 75 cents each. The increased demand for that class of plants is such that now they readily bring about twice that amount, and the supply is not nearly equal to the demand. In fact, the demand for these plants has already influenced the price in Europe. In several recent importations at least twenty per cent. has been added to the price. This is an indication that the increased use of Palms here has been felt abroad, even with vast quantities there grown. I am sure that this price and demand will continue to grow, because we cannot get these grand effects from any other class of plants."

Mr. M. A. Hunt, of Terre Haute, Ind., in replying to the question, "What varieties of Roses introduced within the last two years are worth growing for winter forcing?" said that "Almost without an exception those which gave great promise have proven failures for this purpose." He had found an exception in the case of a little Rose not very generally known, but which can be highly recommended to those who are in a position to make up their own work, though not, perhaps, for shipping for any distance. He referred to the Primrose Dame. Although not a strong grower, it is a very productive Rose, finely shaped and, either in the bud or open Rose-form, is one which is very desirable.

Halls for exhibiting plants, flowers and fruits are better, as well as more cheaply constructed, without board floors. Plants can then be arranged in groups on raised banks or in depressions of various forms best adapted to the character of the different objects to be displayed. Where green sod or moss can be easily procured a better effect can be produced than when plants are staged on tables. Besides this, water, which is always needed in abundance in such exhibitions, can be used to much better advantage with such an arrangement. For fruits and cut flowers, side tables in most halls can be neatly arranged just under the windows, in which light such things are best displayed.

Mr. Ernest Asmus, of West Hoboken, N. J., said, that among Hybrid Perpetuals for early forcing, say from December until February, light colored varieties are the most suitable. His choice of six was Anna Alexieff, Anna de Diesbach, Mrs. John Laing, Magna Charta, Achilles, Gounod and Madame Gabriel Luizet. For late forcing, the best among light colored Roses are Paul Neyron, Baroness de Rothschild, Merveille de Lyon, Mabel Morrison, Captain Christy, Victor Verdier, Marquis de Castellaine, Henry Schulthers and Ulrich Brunner; and, among dark ones, Gen. Jacqueminot, Prince Camille de Rohan, Louis Van Houtte and Baron de Bonstetten.

A good market Chrysanthemum must have a strong, vigorous habit, with branches able to sustain the flowers erect, and fine, healthy foliage. The flowers should be large and well-developed, and not more than two or three on a spray. The colors should be distinct and unique. There is a strong demand for the finest possible flowers, as compared with the smaller pompon varieties. This suggests that growers would do well to pay more attention to quality than to quantity.

A prize of \$500 was offered by Mr. Peter Henderson for the best herbarium, to consist of not less than 500 species of native plants, arranged according to their natural orders. This prize is to be open for competition to gardeners or the sons of gardeners, or to any one engaged in the trade as a grower or seller of plants, who is also a member of the Society. Mr. Henderson's offer was accepted unanimously with a vote of thanks.

Mr. John Smith, of Yonkers, gave it as his experience that slate, when used for benches, exercised no deleterious influence on plants. Indeed, plants on slate benches were much less liable to attacks from various pests than plants on benches of wood, which afforded harbor for insects and vermin, besides encouraging the growth of harmful fungi as they decayed.

Mr. Thomas Cartledge, of Philadelphia, said that only Roses with long stems and good foliage could be sold to advantage. A large and perfect flower with a short stem and poor foliage did not satisfy customers, and would not sell as readily or for as good a price as a fair or ordinary flower, well furnished with good leaves and a long stem.

"To keep down the ravages of snails among Ferns no better means can be employed than Lettuce leaves, Potatoes, or Turnips hollowed out. Perhaps Lettuce leaves are the best. The snails creep inside the leaves during the night, and remain there until morning, when they can be gathered up and destroyed."

The following officers were elected for the next year: President, John N. May, Summit, New Jersey; Vice-President, W. J. Palmer, Buffalo, New York; Treasurer, M. A. Hunt, Terre Haute, Indiana; Secretary, William J. Stewart, Boston, Massachusetts.

"The *American Florist* is a power that deserves our hearty support. It helps us, and the gentlemen connected with it deserve great credit."

The moment of spontaneous and genuine enthusiasm came when John Thorpe, the founder of the Society, was led upon the platform.

Notes.

At the meeting of the Massachusetts Horticultural Society, August 11th, Mr. B. G. Smith, exhibited a basket of fruit of the Wilson Jr. Blackberry, a variety raised by the late Judge Parry, of New Jersey, by crossing the Wilson with the Dorchester. The fruit is very large, handsome and regular, and of good flavor, although lacking somewhat the delicacy of the Wilson, which was also shown in great perfection.

The flowering of *Stuartia pseudo-camellia*, a Japanese species, in the Veitch nursery in England, referred to in our London Letter, seems to have been one of the horticultural events of the London season. This plant was distributed in this country many years ago by the Messrs. Parsons, and flowered profusely this season in the garden of Mr. Charles A. Dana, at Glen Cove, N. Y. A drawing of the flowers of this plant has been made, and will appear in a future issue.

Mr. Walter E. Coburn exhibited before the Massachusetts Horticultural Society, on the 11th of August, a collection of no less than 200 species and varieties of wild flowers, including thirty-seven species of grasses and sedges in twenty genera. These collections of wild flowers are exceedingly interesting and instructive features of the weekly free exhibition of the Massachusetts Society.

Hybrid Gladioli of the *Gandavensis* race are grown in great quantities, and generally in considerable perfection, in the neighborhood of Boston, where there are some large commercial collections. The weekly exhibition of the Massachusetts Horticultural Society (August 18th) was largely devoted to these flowers. The wet season, however, has not been favorable to them, and the exhibition fell short of those of several other years, both in the beauty of the varieties shown and in the excellence of individual specimens. The rare and lovely yellow-fringed Orchis (*Habenaria ciliaris*) was shown in great profusion and in excellent condition in Mr. Hitchin's collection of wild flowers. Another interesting feature of this exhibition was great masses of *Sabbatia chloroides*, one of the handsomest of American plants. It is common at Plymouth, Massachusetts, and at other points along the Atlantic coast, and is seen sometimes in the windows of the enterprising Boston florists. It should find a ready sale, as the beautiful pink flowers are delightfully fragrant, and remain fresh for some time when cut, while unexpanded flower buds will open in water after the plants have been gathered.

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Sentimental Objections to Felling Trees.

IT hardly needs special affirmation in these pages that a fine tree or group of trees is of itself an object to admire and to preserve with reverential care. And yet cases often arise when the removal of a noble tree is demanded on grounds distinctly higher and broader than those upon which the affection and respect for it are based.

It is our frequent inability to recognize such cases for what they are, and our unwillingness to act in them even when they are clearly recognized, which prove that our attitude towards trees is sentimental and irrational. Whether a tree is or is not a fine example of its kind is a question subordinate to the broader one whether it hurts or helps the general aspect of the scenery in which it stands, whether it enhances or detracts from the beauty of neighboring things; whether, in short, it stands where it ought to stand, or, on the contrary, where something else or nothing at all ought to stand. In almost every possible case a tree is a part of a larger whole, and it is a fundamental axiom in every search for beauty that the interests of the whole must take precedence of the interests of any of its parts.

If a group of trees is incongruous in form or color, and could be made harmonious by the removal of one or more individuals, there should be no question as to their removal, no matter what intrinsic claims they may have to admiration. It may often be a difficult task to decide which ones to sacrifice; but it is a task which should be entered upon without sentimental or superstitious compunctions. A bleeding stump may almost make a heart bleed for the moment, but this is a wound that will quickly heal under the influence of the increased beauty of the trees which remain. In like manner, when a single tree or a whole group is detrimental in a wider way, when it hides a still more beautiful tree or group, or a fine middle distance, or a lovely stretch of horizon; when it hides anything which would be of distinctly more value than itself in the scene, or when it gives an uncomfortable look of crowding and of excluding air and light, it should be sacrificed. And a like result will be sure to follow—quick

forgetfulness of the vanished charm will follow upon the revelation of still greater charms.

It is impossible to take even the shortest walk abroad without seeing many places which would be vastly improved were one or more trees cut down. Yet even when the desirability of their removal is confessed by their owner, how difficult it is to persuade him to raise the axe! The house may be damp and dreary; other and perhaps still finer trees may be concealed from sight; all outlook upon a delightful prospect may be shut off; injury may be worked in a dozen different ways, and yet "because he loves the tree" it must remain. If he really loved trees and really cared for beauty in general, it would hurt him more to see the tree where it was palpably out of place than not to see it at all.

But if it were only when fine trees are concerned that this super-sentimental spirit was revealed, it would be easy, at least, to comprehend its existence. It appears, however, almost as often when the most ill-grown, feeble and ugly specimens are in question. For example, as has recently been pointed out in several letters published in these pages, hundreds of Norway Spruces, so far decayed that they are all but dead, disfigure our parks and cemeteries. No one professes to admire their condition or to believe that it has possibilities of improvement. Yet there is sure to be an outcry if a proposal to cut them is made. They are trees, and therefore sacred. The fact that the general effect would, in any case, be better without them, and that they are half-dead themselves, does not impair their sanctity or render the would-be cutter anything less than a heartless vandal.

It is the same in private grounds—one is daily driven to wonder why this or that perishing Spruce or Pine is preserved, and to accept in a spirit very far from acquiescent the answer that it is because the owner "is fond of trees."

It is quite time that unhealthy sentiment should give place to a genuine and sturdy respect for trees. There can be no true advance in the popular love for trees themselves until the public shall distinctly appreciate the difference between a fine tree and a poor one. And there can be no true advance in gardening art until we are clearly convinced that the beauty of a whole is more important than the beauty of any individual thing, and are firmly determined to act carefully and discreetly—yet boldly, too—upon this conviction.

The appropriation by Congress of \$250,000 to be used to investigate the extent to which the arid western portions of the United States can be made fertile by irrigation, and for the selection of sites for reservoirs and other hydraulic works necessary for the storage of water for irrigation and for the preparation of maps in connection with this work, is a wise and proper one. It has already passed the Senate, and will probably be agreed to in the House. There can be no question of the wisdom of this investigation. It is the beginning of one of the most important works ever undertaken by the government of the United States. It is believed by Major Powell, the Director of the Geological Survey, that fifteen per cent. of the arid region within the limits of the United States, or an area of 150,000 square miles—that is, an area equal to more than one-half of the total area of the land now cultivated in the United States—can be reclaimed for agriculture and made to produce valuable crops permanently by means of irrigation. The promoters of this scheme must bear in mind, however, that the forests which cover, more or less densely, the mountain ranges of western America, from which the water for irrigating purposes must be brought into the valleys, are natural reservoirs; that they hold back water which would otherwise cause floods and torrents which no structure of masonry will be able to withstand; and that by checking evaporation, which consumes such a large part of the rain which falls on the western

interior portions of this continent, they largely increase its value. As long as Congress permits the devastation of our western mountain-forests to go on unchecked and unpunished, efforts to secure a comprehensive and permanent system of irrigation for the western States and Territories can never succeed. Reservoirs are valuable adjuncts to the forest in maintaining a water supply for large irrigating enterprises; but unless the forests are preserved, as an initial step, permanent and valuable results cannot be hoped for.

A recent issue of the *Revue Horticole* calls attention to the great value of the little known *Iris pabularia*, the *Krisham* of Cashmere, as a forage plant. This plant, it appears, will flourish in the driest and most arid soil, and once established it cannot be exterminated. The leaves, which attain a height of twelve to sixteen inches, are eaten by cattle either green or dried, the same plant producing two or three crops of leaves in a season. It is recommended that the seeds should be shown in beds, and then that the young plants should be set very early the following spring where they are to remain. They should be planted in rows ten inches each way if the soil is very poor, and fifteen to twenty inches apart in richer soil. A thorough watering will aid the plants to make a good start, should it be dry when they are set. It is doubtful if *Iris pabularia* will prove hardy in the Northern States, but it should certainly be tested in California, and in our dry south-western region, where, as well as in Florida, it may be destined to play an important part in the rural economy of all that part of the country. Seed can be obtained from the Messrs. Vilmorin, of Paris.

The Treatment of Slopes and Banks.

IT is a common mistake, where a road or a flat surface of turf is to be formed at a different elevation from that of the adjoining ground, to give the bordering banks too nearly the form of inclined planes, and to make them too steep, as at *abc* in the diagram. Such slopes at the outset, while all about them is raw, are comparatively neat, and they can be formed cheaply by unskilled laborers, with little guidance or thought on the part of those in direction. They are objectionable, first, because it is difficult and costly to keep them in good order. On such steep slopes, the drainage is either too quick, in which case the grass upon them suffers from drought, or, on the other hand, subsoil water finds an outlet through the bank, making its surface soft and easily washed. Such a bank, therefore, needs to be protected by the best possible turf. But if the slope is in "kept" ground, it is difficult to form or maintain good turf upon it. Neither scythes, lawn-mowers nor rollers can be used to advantage, nor are manures apt to be evenly distributed upon it. Consequently, the turf soon falls into bad condition. If the ground is pastured, as is often desirable in case of a park-like treatment, cattle going up or down the slope poach and gouge it. In either case the grass soon grows in tufts, and the character of a continuous web of turf is lost. Storms wash out the soil between the tufts, and then freezing and thawing and further washings soon bring the whole surface to a sorry condition.

By lessening the inclination of the surface, difficulties of the class thus explained may be overcome. But there will remain, however, another and a more important objection to banks in the form of regularly inclined planes in most situations. They are stiff, formal and plainly artificial. Recognizing that they are so, it seems to be often supposed that the only revision of them necessary to a satisfactory result will be secured if a surface can be formed of a single, uniform, convex curved cross-section—like the front part of an upholstered, spring-seated sofa—made to meet the road or grass-plot at an abrupt angle, as one would trim down the edges of a pie before baking. (Shown by the line *de* in the diagram.) Such a slope is

really not less formal than an inclined plane. To make it less so, the top of the slope may be thrown back from its base further at some points than at others. But it will yet have a very unnatural aspect.

The reason of this is less difficult to understand than might be supposed, judging from the frequency with which such banks are seen in very costly works of landscape gardening, so-called.

A continuous body of good turf implies a continuous body of deep, friable soil. If the effect of a single rain-storm upon a body of such soil thrown up in a pile of convex section is carefully observed, it will be seen that a portion of the soil is washed out upon the adjoining level surface, obliterating the angle where the original slope met it, and making the lower part of the slope concave. (Shown by the lines *ijk* in the diagram.) The longer the bank of soil remains bare and subject to the wash of rain, the more it will spread at the bottom, and the less will remain of the original convex section.

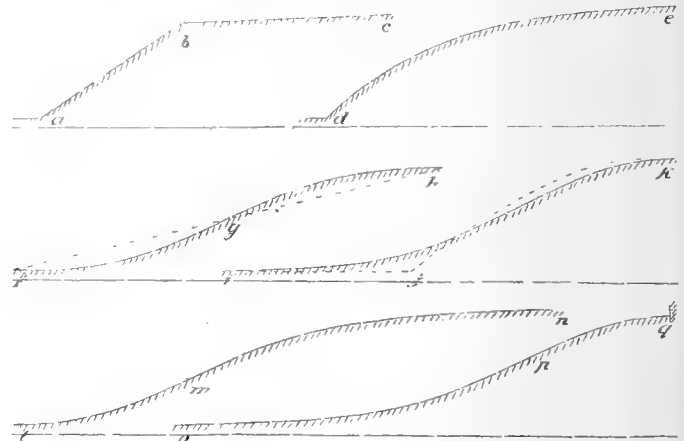


Fig. 51.—Good and Bad Slopes.

Further than this: as a natural bank of loam rarely occurs that is of uniform consistency throughout, the action of the weather upon it will seldom produce a curved slope of the same cross-section at all points, and its outlines will, consequently, become varied and informal.

The lesson to be learned from observation of Nature in this matter is that it is a safe general rule, in making a sloping bank, to give it an "ogee" cross-section. (An "ogee" is an architectural term, meaning a moulding the upper part of which curves outward and the lower inward, or, more broadly, any reversed curve, such as "Hogarth's line of beauty," used in school copy-books for the stems of many of the capital letters. It may be illustrated, in a practical way, by grasping a thin elastic rod with one hand at each end, and then bending one up and the other down.) The line *fgh* is a regular ogee curve, the concave portion *fg* being equal in length and shape to the convex portion *gh*. As a rule, the proportions of the curve should be varied from time to time, so as to produce an undulating surface—graceful, if grace is a quality to be desired in the locality, but in all cases informal and natural. A slope may have at one place a cross section like *lmn* in the diagram, in which the concave part of the slope *lm* is shorter than the convex part *mn*, while a short distance away the slope may resemble the line *opq*, in which the relative importance of the concave and convex parts is reversed.

The diagram illustrates another principle in regard to slopes. If a broad, grassy surface had to terminate at a steep slope, falling to a road or fence, it would, presumably, be best to connect the broad surface with the steep one by means of a long convex curve, as at *mn*, completing the desired ogee slope by a short convex curve, as at *lm*. On the contrary, if the broad, grassy surface had to terminate at a steep slope rising to a fence, terrace, shrub border, or other marked boundary, the concave curve ought to predominate, as in the line *opq*. In other words, the slope,

if open and grassy, in either case ought to appear to be a part of the larger surface of turf, unless there was some obvious reason to the contrary. In making a steep slope on the downhill side of a road, there ought to be, if possible, a nearly level space between the edge of the road and the beginning of the steep slope of from five to fifteen feet, partly to satisfy the eye as to a sense of danger of accidentally driving down the slope and partly to make it appear as if the road had been built upon a natural shelf or terrace. The latter reason applies equally to a slope on the uphill side of a road. In either case, the distance and shape of the slope should be varied from time to time, taking advantage of the configuration of the adjoining ground, or of the existence of rocks or trees, as suggestions for determining where to widen the space between the slopes and the road, or to make them more gentle.

J. C. Olmsted.

Brookline, Mass.

July on the Shores of Buzzard's Bay.

COMPARED with central and western Massachusetts, this south-eastern portion of the state is, of course, deficient both in striking landscape features and in trees of noble size. One goes to Berkshire, not to Plymouth County, to find beautiful views, in the popular sense of the word, and finely developed specimens of trees of many species. Yet the true lover of landscape beauty, as well as the lover of nature's minor productions, does not fail of satisfaction here. Ours hardly looks like a sea-shore—it wears rather the aspect of the shore of a great quiet lake, for beaches are few and narrow, and almost everywhere vegetation comes close down to the salt water. But prettiness, if not grandeur, results from this fact; and even when the water is out of sight there is a great deal of charm in our moist meadows and sandy heath-like tracts, our thick, low-growing forests everywhere encircling tiny ponds or larger lakes, our ubiquitous, picturesque stone fences, and the low, unpainted gray cottages, which harmonize so well with them and with the character and tone of the landscape in general.

Our trees are few in number, and the two which are most prominent in the more westerly parts of Massachusetts—the Sugar Maple and the Elm—are wholly wanting, in a wild estate. White and Pitch Pines, Scarlet Maples, the northern Oaks, Gray Birches, a few Tupelos, an occasional Sassafras, and shrub-like Junipers—these are all we have; and few of them are of large size, for the woods are almost altogether “second growth,” and in some places clearly show by the lines of overgrown stone-wall which intersect them that they cover what were once cultivated fields. Yet here and there one sees White Pines of grand build and no inconsiderable height forming stately groves devoid of undergrowth; and in all other places the young trees compensate by their graceful habit and felicitous intermingling for whatever they may lack in size.

The real richness of the district lies, however, in its shrubs and herbaceous plants. The Heath Family rules in the land and to say this is to say enough in its praise. The place of the long-vanished Mayflower is not unworthily filled in July by the Wintergreen. Huckleberries and Blueberries of many sorts, from the tallest to the lowest, hung out their exquisite white bells by myriads all through the first part of the month, while, as the season has been a late one, the Andromeda is but just past its prime. Mountain and Sheep Laurel have both been blooming in great abundance, and the latter—after a fashion which many flowers have hereabouts and which Mr. Burroughs once remarked upon—has been deep and brilliant in color to a degree seldom seen elsewhere. The White Azalea is going, after having filled the swamps for weeks with its incomparable perfume, but Clethra is fast getting ready to fill its placé. Several Pyrolas are now in bloom, the most abundant being the Shin-leaf; the two Chimaphilas are flowering; and those who like the corpse-like Indian Pipe may find it in abundance.

These are by no means all our *Ericaceæ* nor are the *Ericaceæ* our only boast among blossoming shrubs. The four species of *Ilex*—Holly, Black Alder, Ink Berry and *I. lævigata*—are just dropping their pretty white blossoms. The *Viburnums* are covered now with green fruit which will soon grow pink on its way towards blackness, and be, for awhile, almost more effective than flowers. The Buttonbush is in bud, mingling everywhere with the Alder clumps. The day of the Elder-blossoms is not yet quite past and we have them in abundance, while nowhere could one find Wild Roses with flowers more thickly crowded or richer and deeper in hue. Two *Spiræas*—Meadow Sweet and Steeplebush—are everywhere; and, in short, the only shrub one misses for which one looks on the New England coast is the Barberry, which, common further north and also in Connecticut, seems to have passed us entirely by in its welcome work of colonization.

As for our herbaceous plants, maritime and other, their list is too long to tell, even although August rather than July is their time for flowering in greatest variety. One of the prettiest is the Spreading Dogbane (*Apocynum androsæmifolium*), with its blood-red leaf stalks, and drooping, white, bell-shaped flowers. The Tall Meadow Rue is still in bloom, and with it one occasionally finds the curiously ill-scented form of the purple *Thalictrum* (var. *ceriferum*). The Virginia Anemone occurs, but less finely developed than further west. *Lilium Philadelphicum* is just going out of flower as the great Turk's Cap Lily is coming in. A month ago the low grounds along the shore were blue with two species of Iris, and their humbler cousin, the Blue-eyed Grass. To-day they are spotted with the yellow Star Grass, and spiked with the tall white Alettris. It is a great country for Milkweeds, for Compositæ, for Evening Primroses, for Potentillas, and, of course, for Rushes and Sedges. Several *Polygalas* are now in blossom and the pretty little wild Flax. And as for Orchids, we have just had meadows pink over broad spaces with *Calopogons*, intermixed with which were spikes of the still more graceful and lovely pink *Pogonia*. Two or three greenish *Habenarias* are coming into flower, and our white one (*Habenaria blephariglottis*, var. *holopetala*) will soon be present in large quantities, together with, in lesser quantities, both species of *Goodyera*.

There is nothing new or striking, I know, in this catalogue, and perhaps its greatest interest may lie in the fact that I confess it so incomplete as to be hardly a catalogue at all—for what I wanted to show was that, unassuming though our district is, there is good reason for our liking it so well. The only thing I have to note which may be unexpected, is that in addition to the common Green-brier—*Smilax rotundifolia*—*S. glauca* grows here in great abundance, although by rights (I mean according to Dr. Gray) it should not venture further north than southern New York. Even this is hardly news, as the plant had already been found by Mr. C. E. Faxon on Blue Hill, near Boston; and even if it were news I could not claim the credit of the discovery. It would belong to a hunter of these woods whose eyes are a good deal keener than mine. It may be worth while to add that our Pines, which last year bore no seed, are this year full of ripening cones—both the White and the Pitch Pines.

M. G. Van Rensselaer.

Marion, Mass.

A Bridge in the Thiergarten, Berlin.

THE *Thiergarten* in Berlin is, without doubt, the finest large public park in Europe, and it seems doubly beautiful and valuable as it forms a veritable oasis in the flat, sandy and generally treeless surroundings of the German capital. It was laid out in accordance with the plans of Knobelsdorf, the architect of Frederick the Great, about the middle of the last century, and, in accordance with the taste of the time, partly in a formal way. An open space, peopled with many statues, which was called “The Star,” because it was the meeting point of a number of straight-lined alleys, formed its central feature. But the

largest portion of it was, nevertheless, left in forest, and the alterations subsequently effected have consistently looked towards the preservation and development of its natural charms. As it now appears, it is the model of what a great public park, to be used by the inhabitants of a populous city, should be—amply provided with spacious concourses, drives and promenades, adorned with works of sculpture, many of which are indeed intrinsically poor, but almost all well placed and appropriately environed, and yet, over the greater part of its surface, presenting to the eye a constantly varying succession of natural-seeming landscape effects. No contrast could be greater than that presented by the most formal and the most natural portions of this park. Here we have the long, straight drive, which leads from the Brandenburg Gate to the confines of the suburb of Charlottenburg, and there deep, bosky glades, wild-looking little lakes, or passages of forest scenery apparently as untouched by the hand of man as though the city were a hundred miles away. Yet there is no disharmony between part and part, for the transition from one to another is rightly managed, and instead of an impression of unmotivated diversity, we gain an impression of unity in variety.

The illustration herewith given is from a photograph which represents, not one of the wildest corners of the *Thiergarten*, yet one in which, although the work of man conspicuously appears, natural character has not been destroyed. The bridge, called the "Lion Bridge," from the figures which support it at either end, serves for foot-passengers only, and if less beautiful than some others, is interesting as showing that at least a comparative degree of beauty and an air of simplicity and appropriateness to rural surroundings are not impossible of achievement by the use of iron. The natural development of the trees has in no way been interfered with, and the vista of distant plantations, which the space between them affords, is much more beautiful than could be shown in a picture of this size. But the chief point to which we wish to call attention is the management of the water. Too often we see the streams and pools in parks brought into more or less formal shapes and bordered with a stiff line of stone or concrete; or, even when this is not the case, kept "tidy" by constant interference with the natural growth of the grasses or shrubs which border them. Formally shaped and bordered ponds have, of course, their place—as elements in a design the general character of which is formality. But when a natural landscape aspect is desired, the water should be as naturally treated as the ground. In this picture we see the results of such treatment, partly due, of course, to natural causes, but partly, no doubt, to intelligent, fostering care. No words are needed to explain how beautiful are the irregular borders of this pool, and the rich, encroaching growths of its aquatic plants. To produce, or to preserve, such effects as these, is the highest art when harmony permits them—it is the art which conceals art, and thus equals or surpasses Nature herself in the impression it produces.

Foreign Correspondence.

London Letter.

INCESSANT rains have played havoc with out-door gardens; flowers are not only later by a fortnight or more, but the crop of bloom, except on hardy shrubs, has been poor. Strawberries have been almost a total failure, and bush-fruits, especially Raspberries, are a poor crop, and insipid in flavor. A wet summer, however, is not an unmixed evil, and we shall enjoy the benefit of it next season, for out-door vegetation of every description is growing in a marvelous way. Ornamental trees and shrubs are making such growth as we have not seen for years, and large fruit trees, though, as a rule, borne down with fruit, are forming vigorous shoots,

Under glass the effects of a sunless sky for weeks in succession are not so apparent, and this is particularly noticeable in the great gardens and nurseries, where a large variety of plants is grown. Our great national garden at Kew, for instance, has been greatly benefited by the wet season, and both in the open air and in the houses I have never seen the vegetation look finer, and even at the present time, when the flower season is usually considered on the wane, the gardens beam with beautiful, rare and new plants in flower, so numerous that I shall devote the present letter to mentioning some of the most noteworthy among them.

Among the Orchids a few rarities are in bloom, the choicest and most beautiful being *Sobralia leucoxantha*, a new species of which only about half a dozen plants are said to be in the country. In growth it resembles the dwarf form of *S. macrantha*, and the flower is almost as large, being four or five inches across. The sepals are snow white, as are also the petals, which are broader, while the labellum has a circular lobe exquisitely frilled, and of a bright, clear yellow. Its flowers differ from those of the other new *Sobralia*, *S. xantholeuca*, the sepals and petals in the latter being yellow, while the centre only is white. Like its relative, the common *S. macrantha*, it succeeds well in the Cattleya house. The charming little *Phalenopsis Marie*, which was discovered by Mr. Burbidge while traveling for the Messrs. Veitch, is in bloom. It belongs to the Sumatrana section; has long, green leaves and short spikes of small flowers. Their color is white, heavily blotched with coffee-brown, and with a narrow, filose labellum stained with purple or amethyst. It is also one of the rarest species. I ought to mention the wonderful success obtained at Kew in flowering the great moth Orchid, *P. grandiflora*. A few years ago this could not be even grown in a healthy state, but now it grows like a weed and flowers abundantly. The plants are grown in upright cylinders about a foot high, made of strips of teak wood, and filled with drainage-material, with only a little compost of peat-moss and charcoal at the top for the plants to get a root-hold in. The specimens in some of the cylinders carry five spikes, with from twelve to eighteen flowers on each. This magnificent display, numbering two to three dozen spikes in all, has been enjoyed for the past two months. The little *Cypripediums* of the *niveum* group are in flower together, and one may see what affinity there is between *C. niveum*, *C. concolor*, *C. Godefroyæ* and *C. bellatulum*. Though they merge, as it were, into one another, there is no question but that they are distinct from the gardener's purpose. *C. bellatulum* is very heavily spotted, and is a rounder flower than that of the *C. Godefroyæ*, and is, therefore, at once distinguishable.

A rare *Ipomæa*, named *I. Hardingei*, is in bloom in the tropical Water-Lily house, and a very beautiful plant it is. This is said to be a hybrid, one of its parents being the common *I. paniculata*. The flowers are similar in size, color and form to those of the parent, but the leaves, instead of being digitate, are bilobed, larger and hairy. It is a rapid growing stove-climber, and is capable of garlanding a roof or pillar in a charming way.

A new water plant, *Eichornia tricolor*, is in flower at Kew for the first time. In habit of growth it closely resembles *E. azurea*, the leaves being cordate, bright green, and with swollen petioles, but the flowers are not so fine. The lower petals are rich purple, the upper ones pale blue with yellow centre, and are borne on erect spikes about two feet high. On seeing it I at once compared the flower with those of the common *Schizanthus pinnatus*, the resemblance being very striking. It is only valuable for growing with tropical Water Lilies and other aquatics.

A tropical bulbous plant, *Hæmanthus Katharinæ*, is now in full flower, and a more brilliant or imposing summer flowering bulb for the stove is not in cultivation. From the great globular bulb it sends up a stout stem bearing

numbers of broad, long leaves, and overtopping these is the huge head of flowers, like a half globe of scarlet stars bespangled with golden tipped stamens which protrude from them. It lasts in bloom for some weeks, and amidst the usual surrounding greenery of a plant-stove stands out a conspicuous object. It came from the west coast of Africa, and therefore delights in heat and moisture in its growing season. It is certainly a plant to note by those who look for brightly-flowered stove plants in August. Another highly commendable stove bulb is *Crinum giganteum*, from the same region. Its flowers, produced in an umbel of from five to eight on a stout

three or more flowers on each stem, and has been in bloom for a month past. Similar to this variety, but not so fine, is that named *eximia*, and there is another called *major*, all of which will, perhaps, in course of time, be grown in place of the old sort.

Among other flowers of the week here worth noting are the following: *Impatiens Hookeri*, the new tropical Balsam sent out recently by Mr. Bull. It is in all respects a stove plant of the first rank, easily grown, of vigorous habit and a profuse bloomer. The flowers are large and of a brilliant carmine-magenta. Like its relative, *I Sultani*, it is already largely grown in this country, and may be



A Bridge in the Thiergarten, Berlin.—See page 327.

stem from two to three feet high, are nearly six inches across, pure white and with a fragrance like that of vanilla. It is of the easiest culture, and remains in bloom for weeks. Its specific name is misleading, as there are several *Criniums* to which this would be a pigmy in size.

Of quite a different type of beauty is the *Milla biflora* from Mexico. It is a slender growing plant, with narrow, grassy foliage and wiry stems rising about a foot high and carrying one or more flowers. These are about two inches across, perfectly star-shaped, of snowy whiteness and fragrant. It is very beautiful, and lasts in beauty a long time during the present month. At Kew it is grown in pots, and treated as an ordinary half hardy bulb, as it has been found useless to plant it in the open ground. It is quite worthy of any extra attention bestowed upon it.

Another green-house bulb of surpassing brilliancy is a variety of the common *Vallota purpurea* named *magnifica*. It is altogether larger than the type in bulb and leaf, has a taller and stouter flower-stem, and flowers nearly twice the size. They are funnel-shaped, of a glowing vermilion, with conspicuous white centre. It carries

found in all the best gardens. Another of Mr. Bull's recent introductions is *Aristolochia elegans*, one of the prettiest in flower and most elegant in growth in the genus, and while most of the species are too large for ordinary houses, this may be grown as a small trained pot-plant. The peculiar shape and strange color of its flowers make it an object of interest in a plant-store. Those who want a continuous and abundant crop of cut flowers should get the Bolivian *Dipladenia (D. Bolivensis)*. Its large, funnel-shaped flowers are snow-white, with only a blotch of orange in the centres. The plant is a climber, graceful yet vigorous, and continues in bloom for weeks in succession. This and the lovely little *Passiflora Kermesina*, of which I lately made a note, are two of the best stove-climbers, and if planted close together they add to each other's charms. In the green-house one of the best climbers is *Rhodochiton volubile*, an awkward name for a most exquisite plant. At this season it festoons the rafters or pillars of a cool green-house with wreaths of purple, bell-like calyxes, with deep crimson almost black—corollas. It is of the simplest culture in large pots or when planted out in free soil.

One of your delightful Magnolias, *M. glauca*, or Swamp Laurel, has been in bloom for a month past, and the beauty of its ivory white cups and its delicious fragrance are a surprise to us. Our wet weather has apparently suited it, for I have never seen it so fine as it is this year. Usually the flower buds become scorched on dry soils before they have time to expand.

London, August 8th, 1888.

W. Goldring.

New or Little Known Plants.

Spiræa pubescens.

THIS dwarf *Spiræa* is a decided acquisition to gardens, flowering, as it does here, from the tenth to the fifteenth of May, or two or three weeks earlier than the well-known *S. triloba*, which it resembles in habit, although smaller in all its parts. Its flowers, as are those of that species, are produced in dense, umbellate corymbs from the ends of short, lateral, leafy branches of the year, and quite cover a considerable portion of the main stems. These are slender, terete, zigzag, slightly pendulous, two or three feet high, the shoots of the year densely covered with pubescents. The leaves are ovate-acute, sharply serrate above the middle or somewhat three-lobed, puberulous above and densely villous-pubescent on the under surface, especially on the midrib and two or three principal veins. The inflorescence, as pointed out by Maximowicz, is quite naked, with the exception of a line of hairs on the ventral sinus of the follicles. This plant must not be confounded with the *S. pubescens* of Lindley, which is referred by Maximowicz to *S. Chinensis*, which is considered by Mr. Hemsley the same as the *S. dasyantha* of Bunge, of which he remarks, "*S. pubescens* is certainly very closely allied, yet easily distinguished by its narrower, less distinctly veined leaves, having longer hairs on the under surface, and glabrous flowers."

*S. pubescens** is a native of the mountains of northern China and Mongolia. The plant from which our illustration on the opposite page was made, flowered in the Arnold Arboretum this year for the first time. It was raised from seed sent some years ago, by Dr. Bretschneider, from Pekin.

C. S. S.

Cultural Department.

Cultivation of Native Ferns.—II.

SOME very delicate native Ferns which are difficult to cultivate do well grown in pots and wintered in a pit. In summer such potted Ferns may be sunk in a bed of coal ashes in a shady place. A frame for potted Ferns, alpine plants, etc., which has proved successful, is made as follows: A large shallow box, with loosely fitting bottom, is raised on logs about ten inches from the ground. Stones, broken crocks, etc., are laid on the bottom of the box to the depth of several inches, then covered with several inches of sand. The pots are sunk in the sand. This gives perfect drainage, which is a primal requisite, and no earth worms get into the pots on account of being raised from the ground.

In potting Ferns use plenty of broken crocks for drainage. The mixture of soil advised by Mr. John Robinson is peat, leaf mould from the woods, mason's sand and virgin loam, equal parts. He says cocoanut refuse may be used instead of leaf mould. The admixture should be light and porous, with no tendency to hold stagnant water. It should not be sifted. Charcoal broken in bits and crushed is a good thing to mix with soil for Ferns, as it tends to counteract any injurious results from excessive moisture.

Few of the Ferns we have to consider require pot-culture, and for more detail on this subject the reader may profitably consult Mr. Robinson's book on Ferns—referred to in the first article of this series.

It is often desirable to establish in pots choice Ferns which have been collected, before planting them in the open ground, especially if collected at a very unseasonable time.

* *Spiræa pubescens*, Turcz.; Bull. Soc. Nat. Mosc., v. 190. Maxim., Act. Hort. Petrop., vi. 93. Franchet, Pl. David, 106. Forbes & Hemsley, Enum. Pl. China, in Journ. Linn. Soc., xxii, 227.

Much pleasure may be derived from fine native Ferns potted and kept in the house for summer decoration. *Onoclea*, *Struthiopteris*, the *Osmundas*, large species of *Aspidium* and *Adiantum*, are particularly suitable for this purpose.

In cultural directions, a word should be said about rockeries. Rockeries, as commonly made, are unsatisfactory. They are too apt to be made of rocks with a little soil, whereas they should be large bodies of soil, with rocks buried and cropping out on the surface. Rockeries are frequently built to a considerable height above the surface of the adjacent soil; in fact, much too high, as they then require excessive watering to prevent their drying up. For a small rockery of four to eight feet in width twelve to eighteen inches, or, at most, two feet, is quite high enough for the highest parts. That is quite sufficient to give the varying elevations desirable for different kinds of Ferns and to give a pleasing effect.

All of the Ferns considered, except those specially noted, can be grown perfectly well without rocks, and in so far they may be considered superfluous. In my garden there is no rockery, properly so called. Stones and rocks of considerable size, however, may be laid on the ground and half buried in Fern-beds, giving a good effect and helping materially to retain moisture by covering the soil.

The moist, cool surface of rocks makes a grateful surface along which the roots of Ferns, and other plants as well, like to creep. At the Botanic Gardens in Cambridge, some delicate species, such as *Asplenium viride*, *Pellaea gracilis*, etc., are grown very successfully in niches of rock-work, with very little soil, although plentifully supplied with moisture, and covered with sashes in winter.

Rocks may be used with great advantage and moderate cost on a natural bank or steep incline, and in such places are most admirable.

Directions for making rock-works are to be found in Robinson's "Alpine Flowers."*

It is to be understood that we are considering rockeries for growing Ferns and for small garden effects, not rockeries of sufficient dignity to give landscape effects; for these special studies are required.

The propagation of Ferns of the class under consideration is generally an unimportant affair, as they are, for the most part, comparatively easily obtained from the woods. They may be propagated by dividing the crowns or running root-stocks during the dormant season, in autumn or early spring. They can also be propagated from spores. For directions for this last method, see Mr. Robinson's book. Ferns are seldom much troubled by insect pests. *Onoclea sensibilis* is the only Fern which attracts insects to any extent. Garden slugs sometimes do damage to the smaller species.

Ferns may be purchased from a few collectors and dealers in this country, but by far the most interesting way, if possible, is to collect them one's self. It vastly increases the pleasure to be derived from the Fern garden to have each specimen a pleasant reminder of the woods, mountain, valley or swamp where it was collected. Seek out some rich locality for Ferns, and with a beginning thus made, a good collection may soon be built up. Fortunately, some of the most desirable species for cultivation are also the commonest.

Ferns are best transplanted in the dormant season, but they may be moved successfully at any time of year. For the beginner early autumn is a good time to collect, as the dormant season is approaching, and yet the various species are easily recognized, as the fronds have not yet dried off.

It is not necessary to consider the season in collecting Ferns, for they can be transplanted at any time with scarcely the loss of a single plant. Success in transplanting most native Ferns is so certain as to be a foregone conclusion, if reasonable care is given them.

When collecting get up all the roots possible and pack in slightly moistened sphagnum moss for transportation. In default of sphagnum, any moss, fern fronds, leaves or grass will do, if the journey is not a long one. Excessive moisture is objectionable in packing, as it induces the Ferns to throw out a weak, sickly growth. The fronds may be cut off without permanent injury, if it is necessary to save space in packing, although it is best to leave them on, especially with ever-green species.

To show the extreme hardiness and vitality of Ferns, it may be mentioned that some years ago, in midsummer, several species of Ferns were collected far from home. The tops were cut off, the roots wrapped in moss, and for eight weeks they were carried in a hand-bag, without the loss of a single specimen. Again, in Covent Garden Market, London, dry roots of Ferns are exposed for sale and grow perfectly

* "Alpine Flowers for English Gardens," by W. Robinson, F.L.S. London, 1879.

well, notwithstanding the fact that they are quite dry and have few or no roots when sold.

In digging up Ferns a stout trowel is good, a dull, stout, broad-bladed knife is better, and best is a tool sold in London shops, but easily made by any metal worker. It is a gouge-shaped piece of steel riveted firmly to a hard wood handle; the tool is eleven inches long and one and one-half inches broad. It is invaluable in collecting wild plants, as it is strong and narrow, so that it is easily inserted into crevices; it is half knife, half trowel. A sharp spade and a hatchet or strong knife are of value in collecting roots of some large Ferns.

Boston.

Robert T. Jackson.

Early Apples.

ABOUT thirty years ago I purchased a number of trees of the leading kinds of Apples in order to study their qualities and their adaptability to my soil.

Although a tart fruit, and one which may with propriety be called a Sour Harvest Apple, it will not compare in size or quality with the apple generally known by that name in this state, which is the Primate. This, in perfection, is unquestionably the best early apple we have. Its season is in July and August, and it lasts four or five weeks. Its defects are extreme liability to insect attacks and its tendency to become watery. Its crisp, tender flesh and fine flavor, added to its earliness, render it a great favorite in spite of the above objections. If there are locations where it is exempt from these drawbacks it cannot fail to satisfy the most fastidious. It is also an early and regular bearer.

The Red June is a very handsome fruit, and the tree a fine, erect grower, but the apple lacks the tender crispness of the others, and is subject to the apple-scab, which sometimes mars a great portion of its surface. This year, however, they were finer and more beautiful than ever. The Duchess of Oldenburg is a large, fine-looking fruit, a little later than any of



Fig. 52.—*Spiraea pubescens*.—See page 330.

Among the early kinds planted there were Red Astrachan, Early Harvest, Early Joe, Summer Rose, Keswick's Codlin, Duchess of Oldenburg, Carolina Red June, Primate and Saint Lawrence. These trees are all alive to-day, and a failure to get Apples every season from some of them has never occurred. Of the above named, the Codlin is the least desirable, though a prolific biennial bearer. The fruit is too acid and low in quality either for dessert or for cooking. Astrachan is also quite sour, but a far better Apple to eat than the Codlin—earlier, handsomer and better in every way. Its chief demerits are its liability to rot early, and its habit of growing in clusters, which affords a fine nesting place for the codling moth and other insects. If they could be thinned till single Apples took the place of clusters, it would no doubt obviate this difficulty to a great extent, and, perhaps, when spraying the trees with arsenites becomes general, we shall have less to fear from these insects. Early Harvest comes in at the same time, and though less acid, is smaller, and not so liable to insect depredations.

the preceding, and though not so desirable as a dessert fruit, is an admirable Apple to follow these for cooking purposes. It generally grows very smooth, much more so than Astrachan, Codlin or Primate. It ought to be a good market fruit, owing to its fine size and attractive appearance. The Primate is too tender in this respect, and needs to be handled more carefully than eggs; the least pressure mars the delicate skin and injures its appearance.

The Saint Lawrence is in season at the same time as the Oldenburg, and is a better Apple, being crisper, milder and more highly flavored. The flesh is white and tender, often streaked or veined with red. Its season is in August, just after Summer Rose is ripe. It is an abundant biennial bearer. The only objection I have ever found against it is that it does not last long enough.

Early Joe proved to be Summer Rose, a small to medium sized Apple of fine quality and handsome appearance, the largest specimen reaching a diameter of two to two and a

half inches. They are remarkably handsome, always sound, smooth and fair; indeed, a wormy one is hard to find and blemishes of any kind are rare. What peculiar properties the tree possesses, why it should escape insect attacks and always present the same smooth and wax-like appearance in the midst of other varieties badly affected, is another unsolved problem. This fact, together with its other good qualities, increases my appreciation of it every year, so that, all things considered, it commends itself as the best Apple of its season that I have grown. The smallest specimens of an inch in diameter are as perfect as the larger ones, which is not true of any other Apple with which I am acquainted.

Since writing the above the report of the United States Department of Agriculture has come to hand, in which the chief of the Pomological Division has this to say of the Summer Rose: "In my opinion this little favorite surpasses Carolina June, Early Harvest, and all other early Apples. It is as early as any, begins to bear soon after planting, and seldom fails to carry a full crop, even when most varieties fail. The tree has a beautiful, round head, the branches are stout but not heavy, with very distinct gray dots upon the new growth. It is essentially a family Apple, beginning to ripen with the very earliest, and continuing for about six weeks. It sells well in market, but is more especially a dessert variety. It originated in New Jersey. Size: small, two to three inches; shape: flat to round, regular; surface: very smooth; color: white, with stripes and splashes of the most delicate tints of carmine; dots, very small; basin, wide, abrupt and rather deep, regular; eye, small and colored; cavity, narrow, regular, not russeted; stem, usually quite short; core, large, closed, regular, meeting the eye; seeds, numerous, short and plump, light brown; flesh, white, with rarely a tint of pink next the skin; fine-grained, tender, crisp, juicy, except when over ripe; flavor, sub-acid, very pleasant; quality, as good as the best of the early kinds; season, June to August, in the Central States."

In conclusion, let me call attention to the unusual prevalence this season, among the early apples, of that insidious enemy, the apple maggot. The Jersey Sweet has been unfit for anything but stock food for years past from the presence of these insects, and Golden Sweets have been nearly as bad. This season Primate, Astrachan and Early Harvest have been affected. The increase of this pest gives abundant cause for alarm, and measures must be sought for checking its progress, or our early apples are doomed.

Montclair, N. J.

E. Williams.

Hyacinths for Forcing.

SELECTIONS should be made and bulbs secured as soon as possible; the sooner ordered the better the stock will probably be, and the prices are not likely to be lower. Besides, one of the chief points to observe in forcing Hyacinths is to have them potted early, so as to give them a long season to fill the pots full of roots before winter sets in. Well-rooted Hyacinths usually throw up perfectly developed, strong flower spikes; poorly-rooted bulbs produce malformed spikes or often fail altogether; indeed, no poorly-rooted Hyacinth is fit for early forcing. Many growers pot Hyacinths for succession, say, a lot about the first of September, and others at intervals of three or four weeks till the end of October, but this plan has no advantages. Some varieties naturally flower earlier than others, and, with a judicious selection of varieties when forcing time comes, and by introducing the earliest kinds first to the forcing-house, a continuous supply can be maintained from the first of February till April.

The deep Hyacinth pots are the best, but ordinary flower pots are good enough. One bulb in a five-inch pot, or two or three bulbs in a six-inch pot are sufficient. In this way Hyacinths can be used to advantage as pot plants in the window or green-house. But florists who grow Hyacinths for cut flowers only, seldom pot them at all, but grow them in flats, three to four inches deep, and of any convenient size. The bulbs are set one or two inches apart.

Any fresh, fibrous, loamy soil, such as is used for pot-plants, will answer for Hyacinths, but a little extra sand helps it. Rotted sods, with one-fourth its bulk of well-rotted cow or barn-yard manure or leaf soil and one-fourth of sharp pit or river sand, is a capital compost. Be cautious about using much manure in the soil; rather apply stimulants from the surface after the bulbs are started in the forcing-house. And never use fresh, wet or pasty manure.

All bulbs will grow and bloom well if in potting they are buried in the soil, as is the practice with Freesias, Alliums

and Crocuses, and nearly all of them will flourish as well if the bulbs are partly above ground, as Cyclamens and Hyacinths are usually grown. In potting, place the Hyacinth bulbs two-thirds their depth in the soil, and throw a dash of clean sand under and about them to induce ready rooting and lessen any tendency to decay.

After potting them water from above through a fine rose and place them close together in some cool place (but not under trees) out of doors, bank them over with four or five inches of earth, sand or ashes, and let them stay there till November, when they may be taken indoors to a cool part of the cellar or shed, and there again covered with earth, coconut fibre, half decayed leaves, or other material, but the covering now need not be so deep as it was out of doors. Never allow frost to reach the bulbs; at the same time keep the temperature of the place where they are stored below 45°.

By the first of January some of the bulbs will begin to grow a little. A few of the most advanced may then be brought into the green-house, and kept for the first eight or ten days in a shady place and in a temperature of 45° to 50°. After that time remove to a warmer temperature, say 60° to 65°. But until growth advances pretty well, do not place them in a light, sunny place; it is a good plan to invert a flower pot over newly exposed crowns for a week or more, till the foliage and flower spike grow up a little and assume a greener color. High, collar-like bands of stiff paper or tin are used for the same purpose. After the Hyacinths come into bloom it is well to remove them to a moderately cool room or green-house, say 45° to 50°, in order to stiffen the stems and prolong the duration of the flowers.

Catalogues are filled with varieties of Hyacinths, and it often is hard to choose the most serviceable sorts. Those mentioned in the annexed list are all excellent and well-tried varieties for cultivation in pots. The double varieties are not as desirable as the single ones, and there are not many good yellow varieties.

SINGLE-FLOWERED HYACINTHS.—White.—Alba maxima, Baron Van Thuyl, La Grandesse.

White, with rose shade.—Grandeur à Merveille.

Light red.—Charles Dickens, Fabiola, Lord Macaulay, Mrs. Beecher Stowe.

Dark red.—Amy, Garibaldi, Pelissier, Von Schiller.

Blue.—Charles Dickens, Czar Peter, Leonidas, Lord Derby.

Dark blue.—General Havelock, King of the Blues, Sir Henry Barkley, William the First.

Yellow.—Ida, Bird of Paradise, Obelisk.

DOUBLE-FLOWERED HYACINTHS.—White.—Florence Nightingale, La Tour d'Auvergne, Prince of Waterloo.

Rose.—Grootvoorst, Lord Wellington.

Dark red.—Louis Napoleon, Sans Souci, Waterloo.

Light blue.—Blocksburg, Rembrandt, Lord Nelson.

Dark blue.—Garrick, Laurens Koster, Louis Phillippe.

Yellow.—Goethe, Jaune Supreme. *William Falconer.*
Glen Cove, N. Y.

Notes from the Arnold Arboretum.

Tilia dasystyla (*T. euchlora* of C. Koch, a name which he thought more appropriate than the much older one of *dasystyla*), is certainly, in foliage at least, the handsomest of all the Lindens. The ample leaves are thick and somewhat leathery, dark, deep green and beautifully shining on the upper surface, while the lower surface is paler green, with rather small tufts of light brown hairs in the axils of the veins. The young branches are conspicuous from the bright green of the bark which covers them. This tree is a native, probably, of the mountains of Asiatic Turkey and of the Caucasus. It is not very often seen in cultivation, although of late years it has been somewhat planted in Berlin and other German cities, and it is occasionally met with in English nurseries. Here the plants, although still young, are perfectly hardy; they have not flowered yet, and, of course, give no idea of the habit this tree will assume here, or of its probable value in American plantations. Has any one else planted this tree in the United States? If so he will confer a favor upon the Editor of this journal by communicating to him the results of his experiences with it.

The Sorrel Tree, or Sour-wood (*Oxydendrum arboreum*), sometimes called also the Lily-of-the-Valley tree, on account of the shape and color of its flowers, is now blooming. It is the *Andromeda arborea* (the first name) of some of the old collections. The Sour-wood is hardly more than a tall shrub at the north, here rarely attaining a height of more than ten or twelve feet, but in the south, in the mountain forests of Carolina and Tennessee, where it grows in its greatest perfection,

it becomes a slender tree, often fifty feet high. It has deciduous, membranaceous, lanceolate leaves, four to six inches long, and an inflorescence consisting of a spreading panicle of one-sided, drooping, many-flowered racemes, terminating the leafy branches of the season. The pure white, bell-shaped flowers are a quarter of an inch long. It is surprising that this beautiful plant is now so rarely found in gardens. Its handsome, white flowers open at a season when few trees are in bloom, while the brilliant colors, unsurpassed, perhaps, by those of any other American plant, which its leaves take on in autumn, make its cultivation doubly desirable. The name *Oxydendrum* is derived from two Greek words, signifying sour and tree, and relate to the acid flavor of the leaves.

Another plant peculiar to the mountain forests of the Southern States, and too seldom seen in gardens, *Clethra acuminata*, is now in bloom. It is a tall shrub, sometimes eighteen or twenty feet high in the high southern valleys, but at the north rarely attaining half that size. It has large leaves, four to seven inches long, and nodding, solitary racemes of yellow-white flowers, shorter than the caducous bracts. This plant is perfectly hardy here. It is less beautiful, however, than the northern representatives of this genus, the familiar Sweet Pepperbush, which just now is the chief ornament of northern swamps, which it enlivens with its lustrous, dark green foliage and handsome, upright racemes of pure white, spicily-fragrant flowers. This is one of the handsomest shrubs found in North America; it is easily cultivated, and thrives in any good garden soil. Some attention, of late years, has been directed to the value of the *Clethra* as a garden plant, and it is now found occasionally in commercial nurseries.

Callicarpa purpurea, a member of the Verbenaceae family, is now in flower. It is a shrub three or four feet high, with erect and rather rigid branches, opposite, ovate-acuminate leaves, and axillary cymes of small, inconspicuous purple flowers, which would hardly entitle this plant to a place in the garden. The inconspicuous flowers, however, are followed in the autumn by numerous bright purple glossy fruit which quite cover the branches, making this plant and the other species of the genus exceedingly beautiful and attractive objects. *Callicarpa purpurea* is a widely distributed plant from Japan to India, and is practically hardy here. The stems are sometimes killed back in severe winters nearly to the ground, but they always spring up again in time to produce the late flowers which do not appear until the early weeks of August. There is an American species of this genus (*C. Americana*) found from Virginia to the Keys of Southern Florida, generally near the coast, Texas and the West Indies, which unfortunately is not hardy at the north, as it is in fruit a more showy plant even than its Asiatic congener. *Callicarpa* is derived from two Greek words, meaning beautiful and fruit; and these plants are sometimes called French Mulberries, for no very apparent reason. The Japanese species is easily cultivated, requiring no special soil or treatment; and it can be easily raised from seed, which are produced in abundance and germinate freely.

Rosa Beggeriana, var. *genuina*, is a wild Rose of central Asia which has the merit of keeping in bloom here all summer long. Its introduction into cultivation is due to Dr. Aitchison, botanist of the late Afghan Boundary Survey who found it "a common shrub at the western extremity of the Kuram district and throughout the Hariab, in vicinity of streams and water courses; it is also very common near cultivation, where it forms natural hedges along the various channels of irrigation, at an altitude of from 4,000 to 9,000 feet. It forms a bush of from four to six feet in height, the latter in more favored localities. When in bloom it is covered with a mass of pure white small flowers. The fruit is little larger than an ordinary pea, at first orange-red, when fully ripe of a deep purple-black. The shrub is briar-scented. This species is employed, as well as *R. Eglanteria* and *R. Eca*, the Gooseberry, and Hippophae, in forming hedges in the Hariab district; and is much browsed by cattle, especially goats."*

This Afghan Rose forms here a stout, tall bush, five or six feet high, with slender and rather flexible branches, without prickles, and sparingly armed with slender, slightly recurved spines. The leaves, which are composed of three or four pairs of small, oval, sharply serrate leaflets, are pale gray-green. The hardness of this plant and its habit of blooming continuously throughout the season, make it a useful, as well as an interesting, addition to single Roses.

There is no genus of plants hardy here which contains so many shrubs, with handsome flowers appearing in August, as *Hypericum* or St. John's Wort. There are a number of Ameri-

can species in flower in the collection now; but as drawings of several of these have been made, and will be published in future issues of GARDEN AND FOREST, they need not be named even at this time. A few foreign species, however, are worthy of mention. The handsomest of these is *H. calycinum*, a native of south-eastern Europe, and popularly known as Aaron's Beard or the Rose of Sharon. It is a dwarf plant, spreading rapidly by creeping, woody root-stalks, with simple stems, barely a foot high, and large, crowded, ovate or oblong, obtuse, dark green leaves, covered with small pellucid dots. The flowers are bright yellow, three or four inches in diameter, two or three together, upon the summits of the branches, or sometimes in corymbs of five or six. In England this plant is often used to cover the ground in shrubbery beds, for which purpose its compact habit, almost evergreen foliage, and power to spread rapidly, admirably adapt it. But, unfortunately, here it is not entirely hardy; and the stems, in spite of winter protection, are often killed back to the ground. The roots, however, survive the most severe winters, and the annual killing back, while it prevents the plants from spreading and so largely destroys their usefulness for clothing wide stretches of naked ground, does not prevent them from blooming every year, or destroy their beauty for the herbaceous border or the margin of the shrubbery. The only Japanese shrubby species of *Hypericum* is *H. patulum* (*H. Euralum* of some collections). It is a hardy plant here, with slender, smooth, spreading purple branches, not more than two feet high, ovate-acute, entire, revolute leaves, and usually solitary, pale yellow, somewhat cup-shaped flowers. Although less showy than some of the American species, *H. patulum* is one of the most delicate and graceful of all the *Hypericums*, and one of the best of summer-blooming shrubs for the rock-garden.

Androsæmum hircinum (*Hypericum hircinum*), the Goat-scented St. John's Wort, is a very showy plant in flower, with erect stems, two or three feet high, winged branches, ovate-lanceolate leaves, somewhat emarginate at the base, their margins glandular, and very large, pale flowers, with narrowly acuminate petals and long styles. The strong and disagreeable odor of the flowers, to which this plant owes its common name, makes this species, in spite of their profusion and individual beauty, less attractive than many of the other St. John's Worts. There is in the collection a dwarf variety (var. *minor*), a compact and handsome little plant identical with the species, except that it is smaller in all its parts. *Androsæmum hircinum* is a native of southern Europe from northern Spain to the Grecian Islands, and, in spite of its southern origin, is perfectly hardy here.

August 13th.

J.

The Forest.

The Care of Woodlands.

To the Editor of GARDEN AND FOREST:

Sir.—I read a great deal of the importance of planting forest trees and of maintaining forests, but I can find no definite instruction for the care of woodlands. I have two hundred acres of fine wood, but it yields me nothing. How is this property to be made increasingly productive? Can you give me some practical advice or tell me where I can find it?

Baltimore, Md.

Stewart Brown.

[No question is more often asked the editors of this journal than how natural woods should be treated in order to make them yield the greatest profit. It is, of course, impossible to do more than explain a few of the general rules which can be universally applied in the management of woods, with the understanding that each particular piece of woodland or forest requires special study and special treatment, dependent upon its character and condition, the nature of the soil upon which it stands, and the crop which it is desired to obtain from it. A forest of deciduous trees—especially in this country, where a large number of different species are almost universally associated together—is more difficult to manage than one composed of Conifers, which usually grow gregariously, and are, moreover, little dependent upon artificial thinning and pruning. The operations of scientific forestry are all directed to the perpetuation of the forest. They are based on the principle that trees can be grown on certain land more profitably than any other crop, and that this fact being established, rural economy demands that the forest should be a permanent fixture on such land.

*Aitchison, Jour. Linn. Soc., xix, 161.

The operations of thinning, cutting, planting and sowing are all directed to securing the natural reproductions of the forest with the least possible expenditure of money, to which the element of time is properly considered subordinate. There are, of course, exceptions to this rule, as in the case of a forest of Conifers growing upon a level sandy plain, when it is often more economical to cut down all the trees, grub up the roots, and replant, than to allow the forest to reproduce itself naturally by means of self-sown seeds.

The deciduous forests or bodies of woods now found in the more thickly settled portions of the Eastern and Northern States, and generally connected with farms, are usually of two classes: (1) Woods composed almost entirely of old trees, belonging to species of comparatively little economic value, the trees valuable for timber or for fuel having been cut from time to time when needed on the farm or to bring in a little money. The excessive pasturage to which all such woodland is subjected has prevented the growth of young trees to replace those which have been cut, and has destroyed the undergrowth which protects seedling trees, checks evaporation from the surface, where the forest-floor is not densely shaded, and by preventing the blowing away of the fallen leaves, helps to increase its coating of vegetable mould. Such woods, when they are not injured by excessive pasturage, often suffer by the rooting of hogs, which destroy many young trees, and, by selecting the sweet seeds of the White Oaks, the Chestnut and the Beech, and discarding the bitter acorns of the Black Oaks, are, in some parts of the country, gradually changing the composition of deciduous forests. The trees which remain in these old woods often show, in dead branches and dying tops, the effects of injudicious thinning, and of the exhaustion which excessive pasturage brings, sooner or later, to every forest.

(2) Coppice-woods—that is, woods composed largely of suckers, or the growth from the stumps of trees previously cut, it being the custom in some parts of the country, especially in New England, to cut a piece of woods clean, leaving the old stumps to furnish a fresh supply of trees. The disadvantages of this system are, that stump-shoots never make as long-lived or valuable trees as seedlings; that as each old stump produces several shoots, these are crowded together so that no one of them is able to grow into a good tree; that some species of trees produce shoots from the stump more freely and more vigorously than others, so that if left to themselves, these species must eventually occupy the ground, to the exclusion of all others, and that, as a stump loses its power to produce shoots, after two or three crops have been taken from it, a wood treated continually in this way must either disappear eventually or change the character of its composition. Animals are not less injurious to the coppice than to the wood in which old trees have been left standing; they devour and break down the young shoots or root them out entirely.

The first thing to be done, if a piece of deciduous woods, whatever its character, condition or extent, is to be improved and made permanently profitable, is to exclude from it rigorously all browsing animals. Then the owner must decide what sort of trees he desires his woods to be composed of principally. The nature of the soil and the character of the native vegetation should primarily determine his choice, which may depend secondarily, however, upon the purposes to which his forest-crop is to be applied, and upon probable future local demands for timber. In European countries, where the number of species of trees growing naturally is very small, the scientific forester is rarely compelled to occupy himself with forests composed of more than two different deciduous trees, the Oak and the Beech, but in American forests, where sometimes twenty or thirty species of more or less valuable trees are closely associated together in small areas, the difficulties of forest management are greatly increased, and we have still to learn how a mixed forest of many species can be most profitably

worked. At present, at least, the owner must select the most valuable species among those which grow the most freely on his ground, and then, the crop being thus decided upon, devote himself to the development and the succession of the individuals of those species. The nature of the crop being thus determined upon, all the trees, in the case of woods of the class first described, not belonging to any of the species which are to be perpetuated and which have passed their prime and therefore cannot be profitably left standing, should be cut. The condition of a tree can be roughly decided by an examination of its top; when the upper branches begin to fail, it is a sign that it is no longer in a healthy condition or capable of producing much more material. A tree in scientific forestry is considered ripe and ready for the axe when the bulk of its annual increase of wood diminishes or does not increase. This information is easily obtained by means of a simple mechanical contrivance which enables the forester to measure the exact thickness of the annual deposits of wood without injury to the tree and so to determine accurately the annual increase of material. If old individuals belonging to the species to be perpetuated in the forest exist, they should be left to bear seed, from which the future forest is to spring; and the condition of these old trees can often be greatly improved and their lives considerably prolonged, by cutting away all dead branches, by shortening the others, and by reducing the heads. This process not only increases the vigor of the individual, but allows the light to penetrate to the forest-floor about it, and so enables the seed which falls to germinate and grow. Young trees, if any exist of the species selected, must from time to time be freed from the encroachment of undesirable neighbors, and the seedlings, which will soon appear after animals are excluded from the forest and light is admitted by the removal of decrepit or useless trees, must be thinned every few years. Gradually, as the young trees grow up, the remnants of the old forest may be removed—first, the unpruned trees of the non-selected species, not cut when the improvement was undertaken, and then finally, and after the ground is sufficiently stocked with seedlings, the old seed-bearing trees of the selected sorts. The management of a coppice, with the exceptions that there are no old trees to remove, and that the ground is already stocked with a growth of shoots all of the same age, is practically the same. The variety of trees of which the woods is to be composed being determined upon, their growth must be encouraged, and the others removed. When several shoots proceed from a single stem only one should be left to grow, unless it is found that a particular forest can more profitably produce posts or railroad ties than timber of larger dimensions, in which case better returns are often obtained by allowing several stems to grow up together. A mixed system is often found the most profitable in the treatment of a wood originally coppice. A certain number of trees are, at the outset, selected to grow to maturity. All the rest of the shoots are then cut away to allow these selected trees to grow without interference, and thus to get a good start. The next crop of stump-shoots grow up, preventing the growth of side branches on the standard trees, but without interfering otherwise with their development, and serving as an undergrowth and protection to the forest floor. The old stumps, after two or three crops of coppice-wood have been taken, cease to be productive, and the ground which they filled, unless it is too shaded by the standard trees, is finally occupied with a growth of seedlings.

There should be in a perfectly healthy and satisfactory forest three stories of vegetation, so to speak. 1st. A growth of tall trees, near enough together to insure the development of tall, straight stems, without low side branches, which destroy their value for timber; but not so near that their heads exclude all light from the forest floor, and so prevent the growth among them of other plants; 2d. A crop of younger trees growing under and among the last, either of the same species or of some valuable species

capable of supporting shade, and which will replace the older trees when these reach maturity; and 3d, a growth of low undershrubs and seedling trees covering the forest floor, holding the leaves which fall from above, and containing the material for future forests. The task of converting the most neglected and unpromising piece of woods into a forest of this character is not difficult in this climate. It requires only a short time comparatively, but it cannot be done without labor, and without careful study of trees, their nature and requirements.—Ed.]

Correspondence.

To the Editor of GARDEN AND FOREST :

Sir.—The admirable words which have appeared in GARDEN AND FOREST upon the gardener's art have given birth to these thoughts which, perhaps, are worth a place in your columns :

The right of landscape gardening to be acknowledged as one of the fine arts, will not be denied by those who have taken time and pains to consider what is comprehended in those two words.

The first and vital element of success in landscape gardening, lies in the character and intelligence of him who undertakes it. There must be in him an intense, innate love of nature which cannot be repressed—a love which delights in all her beauties, which would bind up all her wounds, and which sympathizes in all her varying moods. It is a reality, and by a strange instinct nature recognizes the fact and adorns herself for the true hearted.

Successful floriculture and arboriculture demand an affection as genuine and self-denying in character as the culture of a little family in the home nest. Care, watchfulness, tenderness, are the elements of success, and in both cases the lack of them is not only painfully obvious, but a sure cause of failure. We are close akin to the fauna and flora of earth.

There is an idiosyncrasy peculiar to the creation of landscapes. The painter, the sculptor and the architect all deal with dead materials. Every touch of the brush, every stroke of the chisel, will produce effects which will remain until age disintegrates or untoward circumstances destroy them. The landscape gardener deals with living materials, he is *en rapport* with them, there is a mutual affinity, and if the artist proves faithful to his trust, he will achieve a living picture. His designs are planted, not painted, and it may be they will not reach their perfection for fifty years or more. They are designs which prefigure the future, and are unique prophecies.

We must also consider the breadth and extent of his work. A skilled painter may require years to perfect a painting of extraordinary size. What then shall we say of a stretch of canvas (so to speak) of hundreds of acres, every foot of which must be covered with the embodied thoughts, conceptions and imaginations of the artist? Unfortunately for him, a park, especially in cities or in their immediate suburbs, can rarely be chosen for original beauty of situation, or facility of adaptation to his plans. But there is a worse living hindrance—park commissioners and politicians who insert themselves between himself and his designs like gravel between cog-wheels.

His whole work must be conceived in accordance with the laws of nature, and developed in the most perfect and enticing forms. In his creation no unsightly shadow of ugliness will be tolerated by way of contrast or relief. Contrasts indeed there must be, but such only as come from differing forms of beauty. Delicacy and grace are heightened by boldness and ruggedness.

There is another consideration which adds to the complexity of the work of a landscape gardener. No duplication, however attractive the original device may be, is allowable. No groups of trees or rocks, no lake or dell, can "have its brother," save in their natural relation to each other. The broad highways for carriages, the bridle paths and the foot paths, must be all kept severely separated, as the glimpse of a neighboring walk would be an unpermitted suggestion of limitation.

All these paths must abound with points of beauty—distant views through long vistas, distant views suddenly revealed, groves whose rich, thick foliage forms a leafy screen, indicate paths, cunning snuggeries and "delectable bowers" which those dear ones seek who are all in all to each other—and not the least beautiful, the wondrous effect of light and shadow on rock and fen, on flower and shrub, on lawn and coppice.

But this same landscape gardener is also an architect, a "*pontifex maximus*," not in the magnitude, but in the number of his bridges and in the variety and appropriateness of his plans. All this wealth of beauty and comeliness is to be created—born out of the fullness and richness of the imagination.

It is a work which none but a true artist could possibly design and achieve.

C. Allen.

Providence, R. I.

To the Editor of GARDEN AND FOREST :

Sir.—I have read the two articles on Prospect Park with interest. Their value is impaired by the fact that they seem to be based upon information obtained from the report of last January, or prior to that date. Since January the Commission has been reorganized, and the criticisms upon its spirit and purposes were not pertinent at the time of the publication of the two articles.

Alfred C. Chapin.

Mayor's Office, Brooklyn, August 1st, 1888.

[The criticisms to which Mayor Chapin alludes were directed to the ignorance and indifference which are responsible for the deplorable mismanagement of Prospect Park as indicated by the twenty-seventh report of the Brooklyn Park Department. Since the publication of that report the Park Commission has been reconstructed, as the Mayor states, and as suggestive of the spirit and purposes with which the members of the new Board will endeavor to discharge the important duties entrusted to them, the Mayor's letter will be read with extreme gratification.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Although Washington Square is partially encircled by fine residences, it is seldom crossed by their occupants, and, forming the boundary line between up-town and down-town streets, is frequented almost solely by what are called the "lower classes." Indeed, one part of it is popularly known as the "Tramps' Retreat." But do these facts supply any reason why the park should be neglected by the authorities and present a very different aspect from either Union or Madison Square? If it is frequented chiefly by the poor, and, therefore, by large numbers of persons to whom it offers their only chance for refreshment and the enjoyment of any approach to natural beauty, should not particular care, instead of a conspicuous want of care, be its portion?

A Down-town New Yorker.

Recent Publications.

Historie des Plantes, par H. Baillon, Paris, Librairie Hachette & Co. The ninth volume of this classical work has appeared. It is devoted to a study of *Aristolochiaceæ*, *Cactaceæ*, *Mesembryanthemaceæ*, *Portulacæ*, *Caryophyllaceæ*, *Chenopodiaceæ*, *Eleatinaceæ*, *Frankeniaceæ*, *Droseraceæ*, *Tamariaceæ*, *Salicaceæ*, *Batidaceæ*, *Podostomaceæ*, *Plantaginaceæ*, *Solanaceæ*, and *Scrophulariaceæ*. This volume, like its predecessors, is illustrated with beautifully executed wood-cuts, quite equal to any of the same character that have appeared in recent French botanical works. Higher praise cannot be given to them.

Number 155 of the *Journal of the Linnean Society* (vol. xxiii.) is devoted to a continuation of Forbes and Hemsley's useful catalogue of Chinese plants, prepared in the herbarium of the Royal Gardens at Kew, and which is now brought down to Compositæ. Great interest is attached to this catalogue, because it contains the new plants recently discovered by Henry and other Englishmen in the central, mountain region above the great cataract of the Yangtse, or about 1,500 miles from the coast. This region, which until recently has been quite unknown, botanically, proves to be extraordinarily rich in new genera and species, and with the Yun-nan district to the south-west of it, of whose richness the Abbé Delavey has already given us a good idea, is now the best field for botanical exploration. It may be expected, too, to furnish a large number of hardy and interesting plants, especially trees and shrubs, to European and American gardens, as the climate, judged by the latitude and elevation of this region, is probably not very unlike, although somewhat less humid than that of the high Alleghany Mountain region of our Southern States. Mr. Hemsley describes, in the present issue of the catalogue, seven new species of *Viburnums*, of which one is said to attain a height of thirty feet, and a new tree with the

flowers of a *Viburnum*, but with digitally compound leaves, for which a new genus, *Actinotinus*, is proposed (Hook, Ic. pl. xviii, t. 1740). No less than six new species of *Lonicera* are described, of which one at least, *L. fuchsoides* (t. 9), recalling in general aspect some of the Andean species of *Fuchsia*, should prove a real addition to garden shrubs.

There are interesting additions, too, to *Rubiaceæ* and *Valerianaceæ*, although proportionately less numerous than those already mentioned, and of much less horticultural interest. The publication of this catalogue cannot fail to stimulate the study of botany and the collection of plants by European and American residents in China, where, with the single exception of central Africa, there is now certainly more to learn about plants than in any other part of the world.

Notes.

Petunias and Drummond's Phlox are used largely in bedding at New England sea-side resorts. Both of these plants seem to flourish in the salt air.

M. Naudin finds that *Eucalyptus coccifera*, *E. anigera* and *E. cordata* are the hardiest of the great collection of *Eucalyptus* tested by him in the gardens of the Villa Thuret.

It is said that Mr. Gladstone owns a large tract of land on the Canada shore, commanding a fine view of Niagara Falls, which he refused to sell when the Canadian Reservation was formed.

It is stated in *Nature* that one of the largest Pine trees (*P. sylvestris*) ever grown in Sweden has recently been cut. It measured over 120 feet in height, and was 12.5 feet in diameter two feet from the ground.

The fact that the dried fruit product of California has increased from 5,070,000 pounds in 1883 to 26,605,000 pounds in 1887, gives some idea of the marvelous development of the fruit-growing industry of the State.

The Wisconsin State Horticultural Society offers liberal premiums for seedling Apples which will endure the trying climate of that region, and energetic search for chance seedlings that may be hardy is being made, with efforts to learn their history.

Hieracium aurantiacum, the European species, which has proved a troublesome weed to farmers in some parts of this State, especially in the neighborhood of Albany, has now appeared in Marion, on the shores of Buzzard's Bay, in Massachusetts.

A correspondent, writing to an English horticultural journal, describes a specimen of *Hydrangea hortensis* that he saw at a flower-show at Chichester. It was growing in a twelve-inch pot, and bore 100 heads of bloom, many of them as large as those commonly seen on single-stemmed market plants.

From the last annual report of Sir R. Schomburgk, director of the Botanic Garden at Adelaide, in South Australia, just received, it appears that the so-called Japan Clover (*Lespedeza striata*), now such an important and valuable forage crop in our south Atlantic States, does not promise to be valuable in south Australia, where the climate, doubtless, as it is in the Mediterranean Basin, is too dry for it.

The discovery of two new enemies of the Asparagus beetle is announced in the *Annales de la Société Entomologique de France*—one of them an internal parasite, which doubtless has had an important influence in controlling the numbers of the beetle. In making a note of this in *Insect Life*, the editors say that up to the present time not a single natural enemy of this insect has been discovered in America, although the beetle is doing much damage and extending its work over a larger area every year. The obvious suggestion is made to import this parasite from France and give it a chance to prey upon the beetles.

As one might expect, a poet who loves nature, often, in a word or two, depicts the character of a tree or flower more effectively than do pages of commonplace description. For example, in speaking somewhere of the Larch, Wordsworth notes the beauty of its vivid light green in early summer and then remarks upon the contrast this offers to that "death-like character in winter" which is so peculiarly its own. Certainly if we were to choose from the vegetable world an image not of deadness merely but of death itself, no tree would be so appropriate as the Larch. But it took a poet's eye and pen to see and record the fact.

At a recent meeting of the Royal Horticultural Society, we read in *The Garden*, Dr. Masters showed ripe fruits of a curious monstrosity known as the Plymouth Strawberry. "It is an alpine Strawberry, in which all the parts of the flower are more or less represented by leaves. The plant was mentioned by old botanical writers, but afterwards disappeared, or was so completely overlooked, that its very existence was assumed to be a myth. Of late years, however, the plant has reappeared in several gardens, and the correctness of the old writers has been vindicated."

Florists are learning that arrangements formed of a single kind of flower, or of two or three kinds at most, are often in better taste than those in which many varieties are combined. But in disposing of our garden and wild flowers in summer we too often fail to recognize this fact. Once in a while, however, one sees an arrangement that could not be bettered. For example, an old lady recently delighted her neighbors in a Boston horse-car by the beauty of an open basket she carried. It was filled exclusively with white and pale pink Sweet Peas, not too closely crowded together, above which rose a cloud of the tiny, delicate white blossoms of the garden Galium.

The current number of *Insect Life* gives an experiment which seems to prove that the white grub, so destructive of lawns, can be easily controlled by the ordinary kerosene emulsion. A white grub (larva of *Allorhina nitida*), had been killing the grass on the Capitol grounds at Washington. The soil was infested to such a degree that an average of six worms were found to every square foot of surface. The ground was treated with the kerosene emulsion, diluted fifteen times, and kept soaked for some days. The result was the destruction of the grubs, with no injury to the grass. No doubt the ordinary white grubs (larvæ of *Lachnosterna*) would be affected in the same way.

Mr. A. A. Crozier writes to *Agricultural Science* to advise the growing of samples of grasses and other forage plants in hills, rather than in small plats or short rows, as is usually done. This brings the kinds near together for comparison, yet leaves them distinct so as to readily catch the eye. The quantity is sufficient to identify the species, and as the plants have better opportunity to develop, the habit of growth is better shown. The hills should be far enough apart to permit horse cultivation, for land is cheaper than labor. The kinds planted will be likely to be so prominent in the hills that ordinary hands may be entrusted to weed them. As usually grown, grass plats become so filled with weeds that their value to the public is greatly impaired. It is well in planting to leave vacant spaces for kinds to be afterward obtained. These may be occupied temporarily with duplicates or with other crops.

The exhibition of the Massachusetts Horticultural Society on August 25th was notable for the display of seedling Gladioli, which has probably never been equaled in the United States. Mr. J. Warren Clark showed a large collection of his new seedlings, in which were a remarkably large proportion of light colors, and the much-sought-for yellows. This collection showed, to a marked degree, the influence of the blood of *G. purpureo-auratus*, or rather of its offspring, the so-called Lemoine race, in the handsome, dark-colored blotch on the lower segments of the perianth, which has always been supposed to mark the descendants of that species. Mr. Clark's collection was remarkable for uniformity of excellence and striking variety of color. Mr. W. E. Endicott, of Canton, exhibited eight Gandavensis and four Lemoine seedlings, with flowers of extraordinary size and beauty. In a small collection staged by Mr. H. B. Watts, of Leicester, was a seedling raised from a Lemoine variety crossed with a Gandavensis which showed no trace of the dark blotch which has heretofore been an unailing indication of the potent Purpureo-auratus blood—an exception worthy of record. Mr. R. T. Jackson, of Dorchester, showed a number of seedlings obtained by crossing varieties of *G. Gandavensis* with *G. dracocephalus*, a species from the Cape of Good Hope, with brownish-yellow flowers. This new race, although hardly "fixed" as yet, is full of promise. The plants are wonderfully vigorous, growing to a much greater height than either of their parents, and flowering freely. The coloring of the flowers is, as a rule, brilliant; and they all show the Dracocephalus parentage in the hood-like upper divisions of the perianth, and in the long, narrow, central lobe of the lower division. The improvement of the Gladiolus and the raising of new seedlings now largely occupies the attention of some of the most intelligent and progressive horticulturists of New England.

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The Responsibilities of Florists and Nurserymen.

IN a late issue attention was invited to the important influence exerted by florists, seedsmen and nurserymen in forming the public taste in horticultural matters. In some directions this influence becomes almost absolutely controlling. It is the florist, for example, who decides for all, except a few inquiring amateurs, what kinds of cut flowers and plants shall be used for the decoration of homes and what kinds shall remain practically unknown. Now, no one can wield an influence of this sort without a corresponding obligation, and in this light the growers and dealers in plants and flowers owe it as a duty to their patrons to see that the public taste is developed by being fed on what is good. Especially is this true when they are called upon to decide for those who are not in a position to decide for themselves which of the old favorites among our plants and flowers shall retain their place in popular esteem and which shall be replaced by newer rivals; which novelties shall be accepted as genuine additions to our sources of enjoyment and which shall be rejected as undeserving of favor.

The desire for novelties as such—for things new, irrespective of their intrinsic excellence—is a strong passion in the human breast, and one upon which a trader of any kind is tempted to play. Although we owe to this passion for novelty much that we have gained in all departments of human effort, its results have nowhere been of unmixed good; and in the department of horticulture evil results have often marked its gratification. Consider the prodigious degree to which the lists of cultivated Roses and other flowers have been enlarged. Every season brings new claimants for favor to the front; rivalry in the introduction of novelties often prevents a thorough testing of the merits of older plants; novelty rather than beauty is often their chief merit; and if they are generally cultivated it can only be at the sacrifice of other kinds. There is no room for all these thousand varieties either in the nursery, or in the florist's shop, or in the purchaser's home; and though the public has undoubtedly something to do with deciding which shall be grown and which neglected, the florist's power is infinitely greater. Many persons who buy have

no taste at all in such matters; others are willing to submit their taste to the florist's judgment with regard to beauty; and if the florist makes, not beauty, but mere novelty, his criterion, the average buyer will but too readily fall in with his mood.

Sometimes, it is true, the public is wiser than its purveyors anticipated. For example, an attempt was made last winter to introduce into the New York and Philadelphia markets certain horrors called "dyed flowers;" but they soon disappeared from view, and we were told, upon inquiry, because "the public did not care about them." But when it comes to more delicate questions—as the difference between Rose and Rose—we cannot, and perhaps ought not to depend upon the public taste; and the florist must necessarily know more and should have an acuter feeling for beauty than his patrons. If, in recommending plants or flowers to his patrons, he should consistently make beauty his criterion, and pride himself upon supplying the most excellent varieties in the most perfect condition, rather than those which are "very expensive because they are new and scarce," he would, in the long run, distance his competitors. He might miss a chance now and then of making a temporary "great success" with one novelty or another, but taking month with month and year with year, he would be sure of the best class of custom, and the most of it. The truth is, we think, not that the public, in theory, cares less for beauty than for rarity, but that it finds it harder to be sure of getting it. A purchaser, devoid of confidence in his own taste (and most purchasers are of this sort), knows he can trust a florist when he says a flower is new or rare, but is by no means so sure he can trust him in matters of taste; and in default of the certainty that he will get the most beautiful possible thing, takes the most singular or expensive. If conditions were different, his choice, we believe, would be different, too; and thus it is that our florists' responsibility in this direction is so great.

Naturally, we have not the slightest wish to decry that constant, vigorous and often costly search for novelties which yearly enlarges our sources of enjoyment by giving us newly-introduced species of flowers or newly-cultivated varieties, which are often real acquisitions. It would be a misfortune, indeed, if we were to be forever restricted to our present list of flowers, long and rich though it is. All we wish to say is that there is danger as well as promise in the search for new things, and that the florist should try to preserve us from the danger while bringing the promise to right fulfillment. The private green-house and garden of the botanical enthusiast; the experimental station established by public or individual munificence—these are the places for the perpetuation of plants whose interest lies in their rarity or singularity, rather than in their beauty of form, their splendor or delicacy of flower, or their richness of perfume. Beauty and sweetness in all their myriad varieties are the things that the public really wants, and these the florist should endeavor to supply. A feeling for real excellence should guide and inspire the enterprising search for novelty, as it should be the only test when the acceptance and perpetuation of a novelty is in question.

We are glad to acknowledge that their past history gives us reason to believe that the florists and nurserymen will not disappoint us. As a rule, our florists' shops have always contained more good things than poor ones; more that are recommended by their excellence and fewer by their mere rarity or costliness. Every year shows an improvement in the quality of the flowers offered and in the effectiveness of their arrangement. We see no cause to doubt that our florists and nurserymen will continue to grow in taste themselves, and in a consciousness of their responsibility as agents in the elevation of the taste of the nation; and these words have been written less as words of needed warning than as words of friendly recognition and encouragement.

THE price of White Pine stumpage has increased enormously of late years—several hundred per cent. in some instances, as the great forests of this tree approach nearer and nearer to extermination; but while the price of the finished lumber has also increased, it has not yet reached the point which will exclude it from many of those uses for which it was once almost exclusively employed in this country. White pine lumber is high enough, however, to cause anxiety among lumbermen, and to compel them to find some cheaper and more available material to take its place. The most immediately available wood for this purpose is yellow poplar, as the wood of the Tulip tree is called commercially. It is light and soft, straight-grained and easily worked; it stands well, and when it is not painted it turns with age to a deep rich color. Nashville, in Tennessee, has always been the important manufacturing point for this lumber, as the Tulip tree is found in its greatest perfection along the banks of the streams which flow down the western slope of the Alleghany Mountains; and south of the Ohio and north of the Gulf States it has always been the best local building material. The attention which is now paid to yellow poplar, however, is much more general, and the manufacturers of this lumber are active in their efforts to secure logs and regulate the price of the manufactured lumber. But yellow poplar is not destined to play any very important or leading part in the lumber supply of the United States, and the future of the business is hardly worth considering. The Tulip tree does not form forests by itself, and is not even a considerable element in the forest anywhere. The trees are often very large, but they are widely scattered, and the most accessible have already been cut. There are still great quantities, in the aggregate, of this timber standing, but much of it is now almost too inaccessible for profitable manufacture.

Bass-wood, or linden, a soft and easily worked wood, which is found in considerable abundance in the extreme Northern States, is now used to replace white pine in the manufacture of mouldings and similar objects, for which it is well suited. The quantity of bass-wood, however, is too small to make this tree really important as a factor of the national lumber supply.

Much attention has been paid in late years, as has already been explained in these columns, to cottonwood, southern cypress, and sweet gum as substitutes for white pine. Sweet gum will probably be very largely used before many years, and for some purposes, like flooring strips, it will make an excellent substitute for white pine. The supply, too, is large, and it is likely to last, as the Gum tree grows on land which cannot be used for agricultural purposes.

But the real substitutes for white pine, or rather the only trees now growing on this continent in sufficient quantities ever to take its place, are the Long-leaved Pine of the Southern States, and the Oregon Fir of Puget Sound. These are the trees upon which the American people will have to depend during the twentieth century, or until they are exhausted or a new crop of White Pine grows up in the Northern States and in Canada.

Flowers in Japan.—I.

THERE is no country in the world where flowers are so universally beloved as in Japan. They are inseparable from the life, art and literature of the people, and to deprive the Japanese of their flowers would be to take the sunshine out of their lives. They are enjoyed equally by high and low. The richer classes, in the seclusion of their well-kept gardens, can feast their eyes on the beautiful, while the poor have the benefit of the public parks, gardens and flower-shows, and the poorest of the poor devote a few cents of their earnings to the gratification of their taste.

But in Japan, where everything is characterized by

extreme simplicity, the people are consistent in caring more for the beauty of individual flowers than for the effect of large masses. The graceful and refined lines of a few well arranged flowers and twigs are a never-ending source of pleasure to them and no desire is shown to make a vulgar display of great quantities of blossoms. The art of flower-arrangement, which forms a part of the education of girls of the upper classes, has simplicity for its foundation. It is divided into a number of schools or classes, and a long course of study is required before one can become proficient in either of them. Nothing in the arrangement of flowers is left to accident or to individual taste; it is governed by rules as fixed as those which govern music.

A great variety of flowers follow in constant succession through the different seasons. The snow has hardly disappeared when the early Plum, the prime favorite of all, bursts its buds and is hailed with welcome by the delighted people as the first token of the coming spring. Great gardens or groves of old gnarled, moss-covered Plum trees abound in and about the cities, and thither in the blooming season the people resort *en masse*, dressed in holiday attire, to enjoy an æsthetic feast under the trees and drink fragrant tea. Here they give vent to their delight by inscribing poetic sentiments, too brief, perhaps, to be called poems, and hanging them on the branches of the Plum trees. The Cherry blossoms follow the Plum in quick succession before its latest-blooming varieties have disappeared. The Cherry (Sakura), which almost rivals the Plum in popularity, has many different varieties, single and double, white and pink. But all these trees have the same peculiarity—they bear no edible fruit. They are planted for the flowers only, and so dense is the growth of these, that they resemble great pink and white clouds when seen from a distance. In Tokio the favorite resorts for the people in Cherry blossom time are Umeno Park and Mokojima, the latter being a road which runs along the banks of the Sunida River. Great old Cherry trees line both sides of this road for a distance of five miles, and the branches, meeting overhead, form a perfect canopy of dense blossoms. In the park at Umeno are many exceptionally large trees, some of a variety which resembles the Weeping Willow in habit, and covered with innumerable small pink flowers. Some of these trees are from four to six feet in diameter. At all these resorts temporary tea-houses or refreshment booths are erected. A favorite beverage is Cherry tea, made from last year's blossoms which have been dried and put away for the purpose.

Among later flowers the Wistaria, Pæony, Lotus, Azalea, Iris and Chrysanthemum are the chief favorites. The Wistaria is seen at its best at the celebrated temple-garden of Kameido (Turtle Well) in Tokio. The place derives its name from an old well over which is placed an immense stone turtle. The Wistaria vines are very old and the stems of some of them measure two feet in diameter, while their racemes of flowers, when in greatest perfection, are from four to five feet in length. They are trained over trellises on the borders of the lake, which is filled with enormous golden carp that come to the surface at the clapping of hands to be fed by the visitors.

The Lotus grows naturally and abundantly in all the moats and ponds in and about Tokio and throughout central and southern Japan. The leaves appear on the surface of the water about the beginning of June, and gradually rise until they stand from four to seven feet above the surface, measuring from two to four feet in diameter. The flowers appear about the beginning of August, and continue throughout the month. After the petals have fallen the seed-pods continue to grow, and, while green, form a favorite article of food, as do the long, white roots, which are eaten as vegetables. For Buddhists the Lotus has a somewhat sacred character, and it is often cultivated in the ponds of the temple-gardens by the priests, who use the flowers for altar decorations. Buddha himself is generally represented seated on a Lotus flower, and it

enters very extensively into all forms of Japanese art and decorative work.

The Iris is also a favorite among favorites, and a well-known tea-house-garden at Mokujuma, near Tokio, is celebrated for its annual display of these flowers. The plants are grown here in beds and ditches, somewhat below the surface and partly filled with water.

Flowers are distributed among the people by means of perambulating flower-sellers, and by flower-fairs. The seller goes about the streets carrying two huge bamboo baskets swung from a pole across his shoulders. These baskets (see illustration, page 343) are divided into a number of different compartments, each containing a different variety of cut flowers or leaves. The carrier is sometimes almost hidden by the great mass of flowers and foliage he bears. Yet the construction is light, easily carried, and, like all the articles produced by this people, at once simple, practical and artistic. The common people are the vender's patrons as well as the rich, for, as I have said, the most indigent will buy a few fresh flowers with which to beautify their humble homes.

The flower-fairs or shows take place at fixed dates alternately in the various wards or districts of the city and are held at night. Throughout the preceding afternoon one may see great numbers of farmers and gardeners from the suburbs and the country dragging in their carts filled with all kinds of flowers in pots, as well as with large trees and shrubs with their roots roughly tied up in coarse sacking. When they reach the site of the fair their wares are arranged as temptingly as possible on either side of the street, trees and shrubs at one end and flowers at the other. Innumerable lanterns and torches illuminate the scene. With twilight the first customers straggle along, and by night the streets are crowded with a good-natured, happy throng of men, women and children. Then the bargaining begins, for it is well known to every purchaser that it is the custom to ask from five to ten times as much for the objects offered as the seller expects ultimately to obtain. When the price of a dwarfed Cherry-tree covered with a mass of buds is asked, the gardener answers promptly "one yen, fifty sen" (a yen is divided into 100 sen). The customer shows no surprise, but gravely offers twenty sen. And after many exclamations of "Impossible, honorable master," feints of departure on the part of the would-be buyer, offers to accept intermediate sums, and enthusiastic praises of the beauties, visible and invisible, of the specimen, it is sold, perhaps, for twenty-five sen. Plants are very cheap on these occasions and for a modest sum one can get enough to stock a small garden. But opportunities for the enjoyment and purchase of flowers are not the only attraction of these fairs. Booths for the sale of candy, cakes and children's toys; performances by trained monkeys, birds and dogs; jugglers, musicians and sellers of refreshments surround one until the head is in a confused whirl. But amid all this crowding, noise and bustle the greatest good nature prevails and a more orderly crowd cannot be imagined. As they return to their homes, each person with his burden of sweet-smelling flowers, accompanied by joyous laughing children, one feels that they are indeed the happiest people in the world.

New York.

Theodore Wores.

A Protection for Artificially Fertilized Flowers.

FASCINATING as is the work of cross-fertilizing flowers, there are some annoyances in it that destroy a considerable part of the pleasure. One of the worst of these is the difficulty of inclosing the flowers in sacks after they have been operated upon. The small paper sack, such as seedsmen use, is made of such stiff paper that it is sometimes difficult to tie it about the stem of a flower without injuring some of the delicate organs. Then, after it is attached, it is so heavy that it not infrequently breaks the flower stem, particularly in windy weather. It is quite troublesome, also, to untie the string when it is desirable to remove the sack for the pollination. Sacks made of tissue paper obviate some of the objections, but they introduce another—the thin paper

is so readily wet through by the rain that it will not last.

Some of these difficulties are obviated by the following device: Make small sacks of a very thin, oiled paper, such as nurserymen use for wrapping plants to be sent by mail. Cut them out after a small seedsman's package, as a pattern, leaving the little lappel at the top which, in the ordinary package, is used for sealing it up. Then place a short piece of fine copper wire across the sack, just at the base of the lappel, and paste the latter back over it, as shown in the drawing. This wire serves as a substitute for the string. After the sack has been slipped over the flower, draw the two sides of it

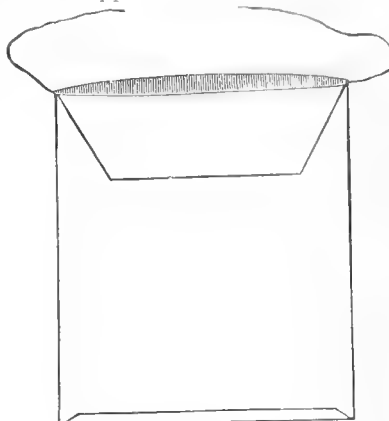


Fig. 53.—Sack for Protecting Artificially Fertilized Flowers.

together with the thumb and finger of the left hand, so that the stem of the flower is directly between the thumb and finger. Then, with the right hand, bring the edges of the sack together and withdraw the left hand, and pinch the neck of the sack snugly about the stem, thus closing it, while the wire prevents it from opening. Then fold down the corner of the sack. The operation requires considerably less time than it takes to describe it, and less than half as long as it takes to tie a string about the neck of the sack. This sack can be taken off as readily as it is put on; it is very light, so that the wind does not cause it to break the peduncle of the most delicate flower; it does not become wet by the rain, and it possesses the additional advantage that the paper being translucent, by simply looking through the sack toward the sun, one can readily see whether or not the ovary has commenced to swell, and thus detect if the operation has been successful. Different sized sacks should be provided to accommodate different sized flowers. For the smallest flowers the sacks need be but an inch wide and two inches long.

I corresponded with a well-known manufacturer of paper bags in New York, to see if such sacks could be cheaply made. In reply, I received some very nicely made duplicates of the sample sent, with the wires inserted, and with the information that they could be furnished at \$1.25 per thousand.

Geneva, N. Y.

E. S. Goff.

Foreign Correspondence.

London Letter.

BARON SCHROEDER sent some flowers from a few of his choice Orchids to the exhibition of the Royal Horticultural Society to-day. One of these was the extremely rare *Saccolabium Heathii*, which, until lately, was quite unique in cultivation. It is a white variety of *S. Blumei*, from which it differs in no way except in the snowy color of its flowers. The spike shown measured fully fifteen inches in length and every tiny white bloom looks like a miniature bird. The perfume is delightful. This rarity came to view a year or two ago by a chance in an importation of the ordinary *S. Blumei*, and the lucky possessors of it, Messrs. Heath, of Cheltenham, sold it to Mr. W. See, of Downside, Leatherhead, and he disposed of it to Baron Schroeder, retaining, however, a small piece in his possession. This small piece has been secured, I hear, for one of your great American Orchid growers, so that there will be one plant of this Orchid in Europe and one in America. I cannot adequately describe to you the chaste purity of the flower, and, though I am not an Orchid enthusiast, I greatly admire this one. Another choice Orchid from the Baron's garden was *Laelia callistoglossa*, one of Messrs. Veitch's finest hybrids, it being a cross between *L. purpurata* and *Cattleya Gigas*, and I have no hesitation in saying that it is the most splendid *Laelia* or *Cattleya* in cultivation. The flowers are larger than those of any *C. Gigas* I have seen; the sepals and petals are broad and do not curl, as in *L. purpurata*, and in color are a soft

mauve-purple, while the labellum, which is fully two inches across, is of the deepest crimson purple. A four-flowered spike from the Baron of that wonderful hybrid, *Cypripedium Morganice*, showed what a grand plant it is when grown to perfection. It is a cross between *C. Stonei* and *C. Veitchi*, and is exactly intermediate between the parents, the chief attraction of the flowers being the broad, prolonged petals, which are heavily spotted with black on a pale ground. The very distinct and beautiful *Cattleya Schroederiana* was shown in flower. This flower recalls *C. dolosa*, being about the same size and form, and of a uniform, pale mauve-purple color. It is a dwarf growing plant, with pseudo-bulbs about four inches high. Another choice *Cattleya* was *C. Chamberlaini*, a hybrid between *C. Dowiana* and *C. guttata Leopoldi*. The flowers are about the size of those of *Lælia elegans*, and have plum purple sepals and petals, and a labellum of the deepest carmine-magenta. The exquisite little *Lælia Batemanniana*, the hybrid between *Sophranitis grandiflora* and a *Cattleya* of which Baron Schroeder is the only possessor, was shown in perfection, much finer, indeed, than when exhibited here for the first time. The flowers are some two inches across, with sepals and petals of a deep rose pink, or, to be more exact, the color is like that of *Odonoglossum roseum*, while the small lip is crimson, with a golden centre. This priceless little Orchid is, perhaps, the rarest in the Dell collection. One more Orchid is worth noticing, and that is *Cattleya granulosa asperata*, a large flower, with olive green sepals, blotched and spotted with chocolate, and a broad and flat lip of crimson-purple, marbled with white. I have dwelt upon these Orchid varieties because I think it will interest those of your readers who are collecting Orchids, and because we have so seldom an opportunity of describing them.

Celogyne Sanderiana, exhibited at an earlier meeting by Baron Ferdinand Rothschild, and certificated, is worthy of mention after these varieties as, without exception, the finest of all the white-flowered *Cælogynes*, and Orchid lovers look upon it as a grand addition to showy Orchids. In growth it is not remarkable, having globular-oblong bulbs as big as a hen's egg, and long, deep green leaves. The drooping flower-spike carries about half a dozen flowers, each three and a half inches across, with white sepals and a broad labellum, spotted and barred with yellow. No details were given of its native country, but it is presumably an Eastern plant.

Messrs. Cannell, of Swanley, showed several new double varieties of Begonia, of which one was singled out as worthy of a certificate. This was called *C. Stowell*, and has flowers four inches across, very double, of a pleasing cherry rose color; the habit of growth is dwarf and sturdy. A new variety of the Oriental Poppy, *Papaver orientale*, was certificated. It is called *Blush Queen*, and instead of the flowers being fiery scarlet, as in the type, they are a pale pink, with black centre. It is a very striking plant and is looked upon as a great gain to hardy herbaceous plants. Among a number of border Carnations one only was considered worthy of a certificate. This was a sort called *B. H. Elliott*, and has medium sized and very full flowers, with yellow petals flaked and tipped with crimson. Messrs. Paul, of Cheshunt, showed a good collection of cut Roses, among which I noted a few that I thought good although not much known. These included that lovely sort, *The Bride*, which I believe we have to thank an American for. It was shown splendidly and a grower told me he thought it would turn out a first-rate autumn Rose. Another was *American Beauty*, also from your side, and likely to become a favorite here. It is a free bloomer, with petals of good substance and of a rich plum-crimson, if I may so describe an indescribable color. *Lady Darnley* is a new Rose that is a good deal talked about here. It reminded me of *Marie Baumann*, though it is different in color somewhat and the form is not so flat. *Silver Queen*, one of William Paul's novelties, is coming to the front. It is a pale pink sort, with flowers of excellent

form and substance. His *Queen of Queens*, too, which was sent out a few years ago, has been shown well this season, and promises to be a good late Rose. Other new Roses I noticed to-day in fine condition were: *Mlle. Eugène Verdier*, a Tea variety, and *Souvenir de Mad. Alfred Vy*, a hybrid perpetual of a plum purple color. It is almost too early for the second crop of Rose bloom, but if the present favorable weather continues, there will be some fine displays at future meetings.

F. Goldring.

London, August 14th, 1888.

New or Little Known Plants.

Lycium pallidum.

OF the seventy species of *Lycium* known to botanists only *L. vulgare*, a native of southern Europe, the well-known Matrimony Vine of all old gardens, and *L. Chinense*, are commonly seen in cultivation. Two north African species, *L. Afrum* and *L. barbarum*, are sometimes cultivated, although the plants seen under the latter name can usually be referred to the Chinese species. The genus *Lycium* is widely distributed through the dry, extra-tropical portion of the world, with two principal centres of distribution, one in southern Africa and the other in the dry regions of western South America, from which several species extend into the territory of the United States, from California to western Texas, with one species in the southern United States, and another in the Sandwich Islands. None of the species of south-western North America, which are all rigid, spiny shrubs, often forming a considerable part of the shrubby desert-growth, have ever been seen in gardens, with the exception of the one figured upon page 341 of this issue—*Lycium pallidum**—which has now been growing in the Arnold Arboretum for several years. It is the largest flowered of the North American species, and one of the first known, having been discovered in New Mexico by Fremont, in 1844, on the Rio Virgen, one of the tributaries of the Colorado River of the west. It is not a rare plant, being found also in Arizona and in southern Utah. *Lycium pallidum*, in cultivation, forms a spreading bush, two to three feet high, with ashy gray, tortuous, somewhat pendulous branches, sparingly armed with long, slender, rigid spines. The leaves are very pale, spatulate and oblanceolate, an inch or two long. The flowers, which are solitary, or sometimes in pairs from the axils of the leaves, are borne on slender peduncles, rather exceeding in length the deeply five cleft calyx. The funnel-form corolla is nearly an inch long, with broad and rounded lobes, slightly pubescent in the interior towards the base. It is green, sometimes tinged with purple. The berries, which are bright red when ripe, are nearly half an inch long. This interesting plant, as well as a few others, from the dry interior region of south-western North America, has proved, quite unexpectedly, perfectly hardy in the Arboretum, where it flowers regularly every year.

C. S. S.

Cultural Department.

The Cultivation of Native Ferns.—III.

THE cultural directions which accompany the following list of native Ferns are based upon personal experience in growing the various species, with the exception of cases otherwise noted. When special directions are not given, the cultivation described in an earlier article is recommended. In the arrangement of species and nomenclature the classification given in "The Ferns of North America," by Professor Daniel C. Eaton, has been followed. The measurements of species have been taken from plants under cultivation. They are maximum measurements of available specimens, but not greater than may be reasonably expected from established plants under good cultivation. Measurements given in italics are from Professor Eaton's work, as the species

* *Lycium pallidum*, Miers. Ill. S. Am. Pl. 11, 108, t. 67.—Torrey, Bot. Mex. Bound. Surv. 154.—Gray, Proc. Am. Acad. vi. 45; Syn. Fl. N. Am. i. 238.

are not at present in the writer's collection or other accessible ones. All species not otherwise designated are indigenous to New England.

According to Professor Eaton, there are 149 species of Ferns indigenous to the United States. Of this number fifty or more species and many varieties may be cultivated in this vicinity in the open ground or with the protection of a cold-frame in winter.

The list of Ferns which are hardy, or nearly so, could doubtless be much extended by species and varieties from the north-western States, Europe and Japan. In this direction there is a good field for experimenting.

Polypodium vulgare. This common evergreen Fern does not grow very luxuriantly in cultivation. Transplant in tufts or sheet-like masses from the rocks or logs on which it grows naturally and plant under similar conditions in the garden. In planting do not bury the running root-stocks beneath the surface of the soil. Leaf-mould. Eight to eleven inches.

Polypodium Californicum. A handsome species which does well with the protection of a frame in winter at the Botanic Garden in Cambridge. Native of California. Nine inches.

Pellaea gracilis. A tiny gem, one of the rarest, and most difficult Ferns to cultivate. Plant in pots with plenty of

Adiantum pedatum. This beautiful Fern, the Maidenhair, is already in high repute, so there is no need to sound its praises. The ebony black stem and exquisite foliage are known everywhere. This species is easily cultivated, and the fronds attain their greatest beauty in moist, shady spots. It is a very useful Fern for cutting, and a supply is easily maintained for any moderate demands. Leaf-mould. Fronds, twelve to sixteen inches broad.

Lomaria Spicant. This very striking and handsome evergreen species is easily cultivated, but, unfortunately, is not perfectly hardy. A native of the far north-west. Peat and leaf-mould. Frame. Fertile fronds, thirteen to eighteen inches; sterile fronds, shorter.

Woodwardia angustifolia. A rare and very handsome Fern, with bright green, distinct foliage. It is hardy, but is not very easily grown, and is safest with the protection of a frame in winter. Peat and leaf-mould. Fifteen inches.

Woodwardia Virginica. Dark foliage, handsome. Culture as for the last species, but is more easily grown. One to three feet.

Asplenium viride. A rare, charming, dwarf Fern. Close to the following species, requiring the same culture. Plants at Cambridge measure four inches.



Fig. 54.—*Lycium pallidum.*—See page 340.

drainage, or in niches of rocks in a cool, moist corner of rock-work frame. This species would probably do well in a Wardian case in a cool green-house. Specimens at the Botanic Garden in Cambridge measure three inches.

Pellaea atropurpurea is a very distinct and attractive evergreen Fern. Easier to cultivate than the last species, but thrives under the same conditions. Eleven to thirteen inches.

Cryptogramme acrostichoides is a rare, attractive, little Fern, easily grown in pots with old mortar. It would doubtless do equally well in a frame. Indigenous to the far north and north-west. Sterile fronds, three to four inches; fertile, six to seven and one-half inches.

Pteris aquilina, or Brake. This commonest of all Ferns is capable of the most splendid results under cultivation in rich, highly manured soil. It has been grown to the height of nearly six feet, and the fronds laid flat would probably have exceeded that length. Unfortunately, the bed was moved last autumn, so that measurements of finest growths cannot be given. It is a little difficult to transplant, but when it gets established it spreads tremendously, and becomes a nuisance in thickly planted borders. Give it plenty of room, with high culture, and it will become one of the prides of the garden. Fifty-six to sixty-four inches.

Asplenium Trichomanes. One of the most exquisite of all our dwarf species. It does not do well in the open border; but thrives in cool, damp niches of rocks and in pots. Evergreen. Peat and leaf-mould. Frame. Four to four and a half inches.

Asplenium ebeneum. Narrow and comparatively tall evergreen fronds. A very attractive species. Peat, leaf-mould, and a frame in winter, as it is not very hardy. If planted in the open border give abundant drainage. Eight to ten inches.

Asplenium angustifolium. This rare and handsome species is one of the most distinct of our native Ferns. Fronds, tall, light green, once pinnate. The most desirable of the large Aspleniums, and of easiest culture. Twenty-four to thirty-three inches.

Asplenium Ruta-muraria. One of our tiniest Ferns and difficult to grow. The finest seen in cultivation was at Kew Gardens, where some rocks, with specimens growing in pockets, had been moved bodily from the woods to the garden. It may be grown for several years by potting carefully, with plenty of broken limestone drainage. One to two and a half inches.

Asplenium thelypteroides. A tall, dark green species. Desirable, and grows very freely. Thirty to thirty-four inches.

Asplenium Filix-femina. This common species grows in strong, fine-tufted masses, and likes a rich soil. It gets rather shabby during the summer, and therefore should not occupy a very conspicuous position in the garden. A new growth may be induced in midsummer, without injury to the plant, by cutting off all the fronds close to the ground, when a new lot will soon take their place. This Fern is a very variable species, and in England a large number of varieties are cultivated in gardens. Fifty-four varieties are offered in the catalogue of one of the English Fern-growers. Many of these varieties are distinct and well worth growing. Two and a half to three and a half feet.

Scolopendrium vulgare. This beautiful and distinct Fern, known as the Hart's-tongue, is extremely rare in this country, and it is best obtained from dealers, or from England, where it is common. It is not indigenous to New England, but is found in New York and some other parts of the country. It requires the protection of a frame in winter. Peat and leaf-mould are advantageous to its successful cultivation. In England large numbers of varieties of this protean Fern are cultivated; but they are not, for the most part, particularly desirable, unless as curiosities. Moore* describes sixty-six varieties with reniform, incised, curled and contorted fronds of every conceivable shape. Thirteen to seventeen inches.

Campptosorus rhizophyllus. The Walking Fern. This interesting species receives its name from its habit of forming little plants at the tips of the fronds, which take root, grow, and in their turn form plantlets at the tips of their fronds, and thus a carpet of Ferns may be formed. Not difficult to grow in pots or in a cool, moist spot, with peat, leaf-mould and lime rubbish. Evergreen. Frame, five to seven inches.

Phegopteris polypodioides. This desirable Fern spreads rapidly, and makes a low, carpet-like growth of much beauty. It is the earliest comer in spring, having well-developed fronds when other Ferns are just pushing up their graceful forms. Of easiest culture. Fifteen to eighteen inches.

Phegopteris hexagonoptera. A species much resembling the above, but of larger and richer growth; does best with protection of a frame in winter. Fourteen to seventeen inches.

Phegopteris dryopteris. This very beautiful dwarf species is one of the most desirable small Ferns for cultivation, as it is easily grown and spreads quite rapidly, making a lovely light green carpet of delicate fronds; leaf-mould. Eight to twelve inches.

Phegopteris calcarca. An attractive species of low stature; succeeds with a frame in winter, and may be hardy. Found in the West. Peat and leaf-mould. Four to eight inches.

Aspidium Noveboracense. A pretty Fern; fronds light green; delicate. Twenty to twenty-four inches.

Aspidium thelypteris. A marsh Fern; distinct, with delicate, thin fronds, very pretty. Twenty inches.

Aspidium Nevadense. A rather tall, handsome species, with bright green fronds. A native of Pacific Slope. Frame. Two feet.

Aspidium cristatum. A tall, narrow, rigid Fern, sub-evergreen, peculiar in its erectness of habit. A handsome and very desirable species of easy culture. Twenty-five to thirty-four inches.

Aspidium cristatum, var. Clintonianum. One of the rare Ferns, and also one of the finest for cultivation, attaining great height and strength under favorable conditions. Two and a half to three feet.

Robert T. Jackson.

Boston.

Plums for the West.

THE notes of Mr. Williams indicate cumulative troubles in attempting to grow the Plums of western Europe and their seedlings, and a growing interest in our native Plums and their crossed seedlings. At the west the foreign Plums have measurably failed from the beginning of prairie settlement, and our farmers have been constantly experimenting with selected native varieties. As a rule, the Miner, Wild Goose and other sorts of the Chickasaw family have failed to perfect paying crops of fruit, though loaded with blossoms annually. The variety giving the best satisfaction in the way of hardiness of tree, perfection of foliage and regular habit of bearing is the Maquoketa. Although plainly of the Chickasaw species, the original tree was found growing at an early day on the Maquoketa River in eastern Iowa. It is rather later in ripening than the typical Wild Goose, and fully its equal in size and quality of fruit.

The varieties of the *P. Americana* family that have proved hardest in tree, best in foliage and most continuous in bear-

ing during the past twenty years are De Soto, Wolf and Wyant. Even frosty weather during the blossoming period does not appear to prevent a full crop of fruit on these sorts. On mature trees, well cared for, the fruit is large enough, handsome enough, and good enough to compete, in Chicago, with the best varieties shipped in from the South, or even from California, where fruit is usually picked prematurely.

We have many other native Plums that seem to have special local merit, and in time they may take the place of the three sorts named. The traces of curculio are found on many specimens of these varieties, but the larvæ so rarely enter the fruit, that full crops of perfect, or nearly perfect, fruit are the rule, and failures the rare exception.

And now let me direct attention to the varieties of the Plum found north and east of the Carpathian Mountains in Europe. Tourists who are judges of fruits will not hesitate to say that the Plums of eastern Poland, northern Silesia and southern Russia are equal to those found in western Europe. Some of these on trial at the West promise to be hardy in tree, perfect in foliage and early bearers of good fruit, not liable to rot or to the attacks of the curculio. As an instance, I have to-day tested the fruit of the Black Plum of Russia. It is a number of days earlier than Wild Goose, and larger, firmer in flesh and better in quality, for any use, than the latter. It is this year absolutely free from marks of the curculio, and its thinness of foliage will not be favorable for the rot. Though very thick and firm, its leaves are narrow and small, so that the fruit is fully exposed to the air, and even to the sun at intervals. This thinness of foliage seems to characterize the east Europe Plums, even the wild Plums and Prunes of the Volga bluffs.

Ames, Iowa.

J. L. Budd.

The Kitchen Garden.

COLD frames should now be made ready for use. The last days of September or earliest days of October often bring a slight frost, enough to scorch the tops of Snap Beans and Tomatoes, Peppers and Egg Plants. Now, if proper forethought has been exercised, these crops will be grown so that it will now be an easy matter to protect them with frames. Place the frames over the crops at once, and pile the sashes near so that they can be put on quickly. Sashes three feet by six are the handiest for general purposes, and for these four-sash frames are most convenient. These frames are twelve and a half feet long, five feet ten inches wide, eighteen inches high at the back, and twelve inches high in front, and made of pine. These can be carried from place to place by two men, and are used for covering from September till May, and stored up one above the other, four or five deep, during the summer months, or in winter when not in use. Temporary frames may be readily constructed by driving some short, stout stakes into the ground along the back and front of a bed of vegetables six feet wide, and nailing boards (two deep) against these stakes. A light frame-work, shaped like a sash, but covered with "Plant-protecting Cloth" instead of glass, is lighter, easier to handle, and almost as effectual as glass sashes in saving vegetables from early frosts. But as sashes or frames cannot be used for all vegetables, sheeting is a fair substitute. It can be spread over the plants at night and held in place by boards or by spadefuls of earth on the edges. Go to a newspaper printing office and get the calico cloth that has been used in cleaning the presses. It is very strong, one, often two, yards wide, and in lengths perhaps of five to seventy feet. It is just as good for this purpose as new, clean calico. Sew these strips into sheets nine or twelve feet wide, and any length to suit up to forty or a hundred feet. Such a sheet is a capital thing to spread over a bed of Tomatoes or Snap Beans to save them from an early frost.

William Falconer.

Glen Cove, N. Y.

September Rose Notes.

AS the cooler nights of autumn have come, more care should be taken in watering and ventilating the young Roses planted out in the Rose houses during the summer months in preparation for winter forcing. They should now be both rooting and growing freely, and becoming thoroughly established, so as to stand the strain of rapid winter growth. And in watering, of course much depends on the weather, though regular syringing should be given just as often as the weather permits. But, when through any oversight the watering of the Rose houses shall have been postponed until late in the afternoon, it is perhaps better to omit it entirely for that occasion, if the night promises to be cold, rather than to have the plants so drenched with moisture that the foliage has no opportunity to dry before the sun gets up the following

* "The Ferns of Great Britain and Ireland." By Thomas Moore, F.L.S. London: 1857.

morning. Or if the plants should be watered under such circumstances, a light fire should be made in the boiler, so as to dry the house somewhat during the night. Some discretion should also be shown in the matter of ventilation, as no hard and fast rule can be laid down for this operation any more than for watering, the state of the weather being all-important. Proper care should be taken that the tender young growth of

It may be mentioned here that another contestant has entered the race for popularity among the Roses for winter blooming, in the form of the new Tea, The Gem, so-called provisionally by its introducer, a grower in the vicinity of Philadelphia. The Gem is of uncertain origin, as the introducer is not positive whether it is an entirely new variety or simply an old sort re-discovered. It somewhat resembles



A Japanese Flower Vendor's Basket.—See page 338.

he Roses is not exposed to cold currents of air, else mildew will surely appear. It is a well-known fact that some varieties are much more tender in this respect than others, Catherine Mermet, and her charming offspring, The Bride, being among the most susceptible to mildew. In fact, it is sometimes rather difficult to keep the former perfectly clear of fungus at this season of the year. Still, a judicious application of sulphur will work wonders in this respect. But while it is quite necessary that the airing of the houses should be watched, it is not intended that the Roses should be coddled, or kept too close. Give them plenty of fresh air, with proper care in other respects, and the result will be seen in the sturdy growth, and the bright, vigorous foliage, that are sure forerunners of good bloom.

Marie Van Houtte in growth, but is claimed to be far superior to that variety, the flowers being about the size of Perle des Jardins and ivory-white in color, frequently tinted with blush or pink in the centre. But as it has not yet been thoroughly tested, it would be best to reserve a positive opinion as to its merits until a longer experience has proved its qualities.

Holmesburg, Pa.

Orchid Notes.—*Paphinia cristata* belongs to a small genus, which is now included in *Lycaste*. All the species are dwarf and bear large flowers in proportion to the size of the plants. *P. cristata* is the oldest, but is by no means plentiful—probably on account of the difficulty in growing it well. It is a very

W. H. Taplin.

handsome kind. The flowers, usually two, are borne on pendent racemes, and are three inches across, plentifully barred and striped with purple on a white ground. The lip is thick and fleshy, purplish-brown in color, and terminated by a tuft of white bristles. It grows here in shallow pans in a mixture of peat and moss. It should be in the warmest house, liberally supplied with water, and at no time allowed to get dry. *P. grandis* and *P. rugosa* are also in flower, but do not vary a great deal from the foregoing, except that the former has much larger flowers.

Calogyne speciosa is not often seen. It grows about eight inches high, its ovate oblong bulbs being terminated by an erect, leathery leaf. The flowers, usually two on an erect spike, are yellowish-green, about four inches across. The large oblong lip is very handsome, reddish-brown, except the front portion, which is pure white, and beautifully fringed. There are also two prominent crests running nearly the whole length of the lip. It is nearly always in flower and growth, and should be accorded very liberal treatment and be kept in a warm house. Another species now in flower, but differing largely from the foregoing, is *C. corrugata*, so named from its wrinkled bulbs. The erect racemes proceed from the young growths, and bear four to six lovely white flowers, about two inches across. The lip has a deep orange blotch on the crest and longitudinal lines of reddish-brown in the throat. Coming from the Khasya hills, it may be grown with the *Odontoglossums*, and, like them, delights in abundance of water, but care must be taken not to over-pot it.

Trichopilia grata is a very pretty and useful Orchid, resembling *T. fragrans*, and, like it, is very fragrant. The sepals and petals are yellow-green, the large, pure white lip being marked with a blotch of yellow. The racemes are strong, somewhat erect, and four to six flowered. It grows admirably under the same treatment accorded the *Odontoglossums*, but should be kept somewhat drier after growth is matured.

Odontoglossum Harryanum is one of the latest and best additions to this large genus. Owing to liberal importations, it is now quite plentiful, and may be seen in nearly every collection. It appears in many forms, and no two drawings of it are alike. That it is very free-flowering in its native state there is evidence in the stout, dry spikes on the imported plants; and imported bulbs produce good spikes, but I have not seen good spikes on home-grown bulbs. The plant in flower with us is from the first importation to England. It is growing freely, and increasing in size of bulbs, with the *Miltonia vexillaria*, and under the same treatment, but I think it would flower better if given more sunlight and a drier atmosphere. In growth it much resembles *O. hastilabium*. The flowers are very handsome, the sepals and petals being of a chestnut-brown, the former barred and tipped with light yellow; the petals are striped with purple and tipped with yellow; the front lobe of the lip is pointed and pure white; the crest is yellow, while the base is heavily striped with light purple.

Kenwood, N. Y.

F. Goldring.

Notes From the Arnold Arboretum.

THE number of trees or shrubs which flower in this climate after the middle of August is not large. The most important of them, from an ornamental point of view, is the so-called Japanese Sophora (*Sophora Japonica*). This is one of the first trees from Japan cultivated in European gardens, having been introduced into England as early as 1763. It is pretty generally distributed through the eastern provinces of China, both wild and in a cultivated state; and it is now supposed that it may have been one of several plants long believed to be natives of Japan, but really Chinese, and introduced by the Japanese in their gardens. *Sophora Japonica* is a round-headed tree, forty or fifty feet high when fully grown, with cinnamon-brown, scaly bark, and wide-spreading branches, those of recent years covered with bright green, lustrous bark. The deciduous leaves are composed of seven to thirteen pairs of oblong-ovate, acute leaflets, an inch to an inch and a half long, dark green and opaque on the upper, and paler on the under surface. The small, creamy-white, pea-shaped flowers, are arranged in large, loosely-branched, terminal panicles, which about the middle of August often quite cover old specimens. Probably the largest specimens of this tree in Europe are the one in Kew Gardens, one of the first plants brought to Europe, and the still larger and more shapely tree near the palace of the *Petit-Trianon* at Versailles. The finest specimen in America perhaps may be seen in the Public Garden in Boston, although it might be expected to grow more rapidly and to a larger size in the Middle States. *Sophora Japonica* is now used in Italy to a considerable ex-

tent as a street tree, notably in Milan, where some of the new boulevards have been successfully planted with it. Its habit adapts it for such a purpose, as do the lightness of the shade, which its pinnate leaves produce, and its habit of flowering late in the summer, when flowers are more valuable than they are earlier in the season. Young plants, however, do not flower very freely, and this tree requires age before it develops all its flowering capacity. The Chinese cultivate this tree largely in some districts for the sake of the "Imperial yellow dye" obtained from the flowers.

Another Japanese tree is now in flower. It is the Japanese variety of *Rhus semialata* (var. *Osbeckii*). *Rhus semialata* is a widely distributed species from Japan, Formosa, and northern and central China to the Himalaya and Khasia mountains. This tree yields the Chinese galls of commerce, which are believed by the Chinese to possess valuable medical properties. The Japanese variety, in which the petioles are broadly wing-margined between the leaflets, is the only one in cultivation. It is a round-headed tree, eighteen or twenty feet high, with smooth, gray bark, and spreading branches, those of the year covered with a rufous pubescence. The leaves are fifteen or eighteen inches long, composed of four or five pairs of ovate-oblong, sharply pointed, serrate, nearly sessile leaflets. These are six or seven inches long, subcoriaceous, dark green and shining on the upper surface, pale, and covered, as are the petioles, with a soft, rusty pubescence, which is more developed on the prominent mid-rib, and fifteen or sixteen primary veins. The small, greenish-white, short-pedicelled flowers are produced in large, terminal, many-branched panicles. The male plant only is in cultivation in this country, so far as I know, and the fruit has not, therefore, been seen here. It is described as flattened, and densely covered with short, purple or white pubescence. The foliage of this Japanese *Rhus* assumes in the autumn the most brilliant orange and scarlet colors. This character, its neat habit, late blooming and perfect hardiness make this one of the most desirable of the small ornamental trees of recent introduction.

Two North American species of *Clematis*, with cylindrical flowers and semi-woody climbing stems, remain in bloom here all summer long. They are *Clematis crispa* and *C. Pitcheri*. The former is a native of river-swamps from North Carolina to Texas. This species is well marked by its membranous foliage with lax venation, and by the conspicuously undulate margin of the upper part of the sepals, which, when the flower is fully expanded, are reflexed from below the middle. The flowers are solitary, on peduncles rather shorter than the leaves, an inch and a half long, bright purple and very fragrant. The leaves are very variable, ternate or pinnate, the leaflets often deeply lobed, especially those near the base of the stems. There is an excellent figure of this plant in Lavallée's "Les Clématites à grandes Fleures" (t. xiv.), and there are figures in the *Botanical Magazine*, t. 1892, and in the *Botanical Register*, t. 60. It is the *C. cordata*, *Botanical Magazine*, t. 1816; the *C. cylindrica*, *Botanical Magazine*, t. 1160, and the *C. Viorna* of Andrew's *Botanical Repository*, t. 71. *Clematis Pitcheri* is found in the country west of the Mississippi River from Missouri to northern Mexico. It may be distinguished from the last species by its thicker and sometimes almost coriaceous leaves and smaller flowers, which are much darker in color, destitute of perfume and borne on peduncles longer than the pinnate leaves, which are composed of two to four pairs of ovate, obtuse, generally undivided, but sometimes three lobed leaflets. It is well figured by Lavallée, "l. c., t. xv.," who also figures, "t. xviii.," under the name of *C. Sargentii*, a mere form of this species with rather small flowers, raised from seed distributed from the Arboretum. The fact that these American cylindrical flowered *Clematis* are perfectly hardy, and that they continue in bloom during several months, make them of considerable garden value, although neither of them are as showy nor as desirable, perhaps, as garden plants, as the scarlet-flowered *C. coccinea* referred to in an earlier issue of these notes.

But a far more valuable plant, from an ornamental point of view, is the common Virgin's Bower, of all eastern North America (*Clematis Virginiana*), which flowers here during the month of August. It grows naturally in low, wet places, along the borders of streams and swamps, sending its long, climbing stems over bushes and low trees. The creamy white and very fragrant flowers are produced in great profusion in loose, axillary clusters, making this plant, next to the Clethra, the most attractive and interesting of the native shrubs which bloom here at this season. The fruit-clusters, with their long and conspicuous feathery tails, which succeed the flowers in autumn, add materially to the ornamental value of this plant. The Traveler's Joy (*Clematis*

Vitalba), a widely distributed species of central and southern Europe, and very similar in general appearance to *C. Virginiana*, but with white flowers, is, on the whole, perhaps, more attractive as an ornamental plant.

August 20th.

J.

The Forest.

European State Forestry.

THE State Department has done a good piece of work in collecting in one volume the reports of our consuls on "Forestry in Europe."* This volume contains a great deal of interesting and valuable information, but, unfortunately, shows the lack of an editor, who might have sifted the relevant from the irrelevant, and by condensation and the avoidance of unnecessary repetitions might have brought out the prominent features which are of value to the American student. There are also found some misleading and sometimes erroneous statements, which are due to misconceptions of the real situation on the part of the consuls.

This is, perhaps, not easily avoided, for it requires a considerable and intimate knowledge of the conditions prevailing in the different European states in regard to their forest management—and the difference in these is great—in order to be able to properly present the facts and to generalize from them.

The ideas which in general prevail in regard to the activity of the governments in Europe with respect to forestry are more or less erroneous, and the present publication is hardly apt to set them aright.

There is a belief that the forests of Europe are mostly in the hands of government, or at least under government control. What is true for a very small part of the country is made to appear universal, and thus the misconception arises.

From a survey of more than three-quarters of the European forest area, including that of Germany, Austria, Switzerland, Italy, France, Spain, Russia, Sweden and Norway, we may draw, then, the following conclusions as to the position which these states take towards forestry interests, and correct the erroneous views existing in this respect.

1. The governments, excepting in Russia, own the smaller part, in many instances only a nominal area of the forest lands—namely, altogether not more than sixteen to twenty per cent. of the total European forest area.

2. Private individual owners enjoy their forest property almost everywhere without interference on the part of the government.

3. Communities—villages, towns and cities—and "eternal" corporations, like churches, colleges, etc., very often own large tracts of forest land as common property. Over these the state, in many cases, exercises supervisory powers, with a view of preventing the waste and depreciation of this common property, acting *quasi* as guardian or trustee, as in other corporated interests. Wherever supervision of private forest property is exercised it is almost always done only after full demonstration that the common welfare, the interest of the many as against the few, demand it, and full indemnification for damage sustained is given in every case.

4. The idea of State supervision in given cases where the danger to the community from forest devastation or destruction is demonstrated, is not an old but a decidedly modern one, having found expression in legislation only within the last twenty to thirty years; mostly within the last fifteen years. While in all other directions of economic life European governments are working towards non-interference and liberation from government restrictions, in the question of forest management the opposite tendency is developing, the necessity for such government supervision on account of various peculiarities of forest property and forest management being more and more recognized.

All European governments, without exception, have felt themselves in duty bound to encourage and aid proper forest management and all efforts at reforestation. This is done:

(a.) By setting a good example in the management of the forests belonging to the State.

(b.) By offering an opportunity of acquiring the necessary knowledge in forest schools and encouraging the employment of trained foresters.

(c.) By aiding and encouraging reforestation, where it appears necessary, with active financial aid.

It may be stated as of special interest to us that nowhere in these States exists there a bounty system, and where it did exist, as, for instance, in France, it failed to produce the results looked for; while the supplying of plant material, free of

cost or at the cost of packing and transportation, and encouragement by the advice and suggestions of forestry officers, or a direct money expenditure for specific purposes of reforestation, have everywhere been practiced with gratifying results.

We also see that the conviction is gaining ground among governments and private citizens, monarchies and republics, that the forests located in certain places serve a more far-reaching and important purpose than that of mere supply of material. Such forests, called protective forests, are, nevertheless, managed with a view of obtaining the material; in such manner, however, that the forest influence may not be disturbed. Forest preservation, in the sense of keeping forests intact and preventing the utilization of their material, is practiced nowhere; it is protection against damage and devastation and proper management that is meant by forest preservation.

Washington, D. C.

B. E. Fernow.

Correspondence.

The Boston Public Garden.

To the Editor of GARDEN AND FOREST:

Sir.—There is so much that is good in the Public Garden in Boston, and its possibilities of improvement are so great, that it is incumbent upon any one who cares either for gardening or for the best interests of the public to raise a voice in criticism of its present condition in behalf of the better condition to which it might so easily be brought.

Its situation in the heart of the city, and in connection with the Common, is fortunate. Its architectural surroundings are more agreeable than those, for instance, of any small park in New York. Its surface is perceptibly, yet gently, modeled, just as one would wish to have it. It embraces a pretty sheet of water and contains many trees, which, although not yet of very large size, are good and promising specimens. In short, the blocking-out of the garden, so to say, is excellent, and if the details of its execution were as good, it would be one of the most charming urban spots in the world. But, it seems to me, these details are so unfortunate, that it is a warning rather than a model.

For some of them the authorities now in charge are not responsible—for the stone coping which surrounds the water to the injury of naturalness of effect; for the statues, which are far from being satisfactory works of art, and for the bridge, which is not only ugly in design, but almost big and heavy enough to carry a railroad. These details it might be difficult to change. But something might be done to mitigate their defects; the bridge supports and parapets might be clothed with vines, and the masses of shrubbery around the pond might more often be brought down over the coping to the water's edge.

It is, however, details of more recent origin, which most seriously injure the beauty of the spot—details which come under the head of gardening proper. Let us stand for a moment on the bridge and see what the outlook offers.

Do we find unity or harmony in any direction? I think no fair-minded observer can say, Yes. The bridge itself crosses the long pond about midway of its length, and forms part of a straight walk which traverses the garden from west to east. Winding paths diverge from this straight walk in all directions, and the first thing we note is that there are far too many of them, and too many wide, graveled spaces where they intersect. Public convenience does not demand so great an expanse of gravel, and beauty is greatly lessened by the degree to which the lawns are cut up, and unity and reposefulness of effect are thereby injured. Next we notice that there is far too much color in the landscape. Green is the color with which nature paints a landscape of this soft, intimate sort, varying it with innumerable shades, but always keeping the medium shades preponderant, and using the lightest and darkest, and above all the brightest, for accentuation only; sprinkling it with the vivid hues of flowers, but keeping these likewise subordinate to the general soft, verdurous tone. Of course, in a garden man cannot follow nature's example with strictness. As he must innovate upon her disposition of surfaces, so he may upon her use of color, but never to such a degree that her ideal is altogether lost to sight. Now, in the Public Garden, color is much too profusely used, alike in the way of bright or variegated trees and shrubs, and in the way of brilliant low plants and flowers. And it is also badly used. Look off towards Boylston Street, for instance, and the most conspicuous object is a group of trees on the edge of the water, a Golden Poplar

* "Forestry in Europe."—Reports from the Consuls of the United States.

between two very light-colored Willows—the combination ugly in itself, and not properly softened by masses of a soberer hue. And then look in every direction at the scores of formal flower beds planted solid with the crudest hues that the ingenuity of the gardener's craft has been able to produce. Were nine-tenths of them away the garden would profit immensely, and the value of the remainder would be as greatly increased. There is often a place for such beds in a garden design, and in the Public Garden there is a very good place. The long, straight path, taking in the conspicuous bridge and ending at Washington's statue, is a formal feature dictated by convenience, and might appropriately and with good effect be bordered throughout with formal beds. Thus the garden would be enlivened, yet its more natural parts would not be disturbed, and the taste of the public for such beds would be as well met as by the multitude of beds which are now misplaced. Misplaced they are indeed. Nowhere can one walk a hundred steps without coming upon a new one, nowhere can one look in the hope of finding a restful verdant view without seeing them scattered about at random in the most glaringly false situations. Nor is it easy, upon examination, to find one of them which is intrinsically good in color. The *Coleus* "Golden Bedder," with its vivid, impure yellow tint, and the "Crystal Palace Gem" *Geranium*, with its cherry-colored blossoms in contrast with yellow-green leaves, are among the most hideous products of recent horticulture, and some of the *Alternantheras* are almost as bad. Yet it would be impossible to count the hundreds of these plants which have been employed; and even when better ones are used they are seldom well combined. Greatly as the modern gardener loves the bedding-out system, he has small idea of the possibilities of beauty it might possess in hands guided by a good eye for form and color. The "crazy quilt" seems to be the work of art which he most earnestly desires to rival. There is, however, at least one instance in the Public Garden of a really good design—the central panels, to north and south of the border which encircles Washington's statue, and which is chiefly composed of those succulent-leaved, low-growing, formally-shaped plants (*Sedums* and *Echeverias*) which above all others are adapted for the purpose. Here the combination of a brown-leaved *Oxalis*, starred by a few small yellow blossoms with the pink-streaked blue-grays of *Stone Crops*, is admirably accomplished as regards both line and color. If the edging close to the statue and the intervening *Palms* were removed, and if all the panels of the border were as good as these two, the arrangement would be a model of excellence, alike in execution and in application.

But these formal beds of gaudy color are not the only things which help to make the Public Garden as restless and inharmonious as possible. Wherever, on the edges of the lawns, there is not a bed, there is sure to be a tropical plant utterly out of keeping with its environment—a *Screw Palm*, an *Agave*, a *Yucca*, an *Araucaria*, a *Dracæna*, or an *India-rubber tree*. Or if not one of these, then a tree or shrub with vivid leaves or an eccentric form. Looking northward from the bridge, for instance, one sees, to the left of the water, first a vase filled with an intermixture of hardy and tropical plants, then a *Golden Poplar*, a yellow *Retinospora*, a *Kilmarnock Willow*; then a *Golden Elder* in a pot, backed by a small *English Elm*, another *Golden Poplar*, and a wand-like *Irish Yew*; then a little *Weeping Willow*, and a half dead, pendulous *Purple Beech*, overhanging an immense bed of *Coleus*, in the shape of a double horse-shoe; this between the winding path and the water, and across the path another big bed casually placed on a sloping piece of lawn and flanked by an *India-rubber plant* and a *Dracæna* that looks a good deal like a broom on end—all within the space of a few feet, in a spot where surely some natural arrangement was called for, and all in no sense combined or disposed, but spotted about at random. It is needless to ask where is the peacefulness, the repose, of such a landscape passage—where is its sense, its beauty of any sort? It has variety enough and to spare, but no trace of unity; contrasts of the most glaring kind, but no faintest shadow of harmony. Nothing helps the effect of anything else, and nothing looks well in itself being so palpably out of place. Of these poor, misused, forlorn looking tropical plants, something the same may be said as was said of the formal beds—both because they are known not to be natural products of our clime, and because they are formal, architectural, in expression, their place is in combination with architecture. On the bridge, or by the pedestal of a statue, some of them might look well. Mingled with shrubberies, or isolated on a lawn, they are ruined themselves and ruin their surroundings.

More than this might be said of the defects of the public

garden—something, for instance, of the many vases which are also isolated on the lawns and even in the middle of the pond; of the plot which is filled with *Aloes*, *Agaves* and *Cacti*, in futile imitation of a Mexican garden, crowded together so their own forms do not show, and as out of place here as a giraffe between the traces of a Boston Herd; of the rock-garden built up under an *Elm tree*, in a flat situation, and filled with another heterogeneous mixture of inappropriate plants. But all I wish to do is to beg the many lovers of nature and lovers of art who daily cross this garden to stop a moment and ask themselves whether it is really as it should be, and, as well as I could, to indicate the point of view from which such an inquiry should be made. And for this purpose surely enough has been said.

M. G. Van Rensselaer.

Marion, Mass.

[The Public Garden in Boston has many defects, and it certainly does not represent, as might perhaps be expected, the true and actual condition of the gardening art in this country, as judged by its best examples. It must be said, however, that the garden has been greatly improved under its present management, and that in several respects it is much less objectionable than it was a few years ago. It is now much better kept in every way than formerly; the number of flower-beds has been reduced, and several useless walks have been done away with. The radical faults with the garden have come largely from an entire disregard of any fixed or established plan for planting, if any one has ever had any such plan or any clear or definite idea on the subject. Flower-beds have been made, and trees and shrubs have been stuck in year after year, not as a part of a carefully studied plan, but haphazard, here and there, or wherever a piece of open turf seemed to offer an opportunity to place a horticultural novelty. The result has been that the garden is now spotted over in every direction with the most incongruous, and often the most absurd, plants, and that there is nowhere, in a garden of twenty-five acres, a single quiet stretch of turf or a single spot where the eye can find repose. This feeling of a want of restfulness, too, is increased by the fact that the boundaries have been left too much exposed, so that it is impossible, within the garden, to obtain anything like a feeling of being in the country. The cost of maintaining the garden is enormous; much of this money could be saved and the garden immensely improved, if half the flower-beds and a great many of the walks were turfed over. The bedding gardening, both spring and summer, while perhaps no worse in design and execution than that seen in Hyde Park and in Battersea Park in London, certainly is not artistic. The plants are not always well selected and the combinations of colors are often appalling. The truth is, that the artistic arrangement of bright colored flowers or foliage plants in masses, whether they are *Tulips* or *Coleus* and *Scarlet Geraniums*, requires great artistic feeling, long practice and rare good judgment. Gardeners rarely possess the first of these qualities, while artists, who might make harmonious combinations of color, lack the technical knowledge and the interest in such combinations. The strongest argument against the bedding out system as a system is found in the difficulty of finding men who can do it in a truly artistic manner. The French make such combinations of color better than any other people, but even in Paris really good combinations of colors are rather the exception than the rule. English work of this sort, as might have been expected, is certainly far inferior to the French, while outside of Chicago, and possibly Pittsburgh, there is nothing so bad in the United States as the bedding in the public and many of the private English gardens. Another objection to elaborate bedding gardening—and this is true as well of any absorbing specialty in gardening—is that it inevitably leads to the neglect of other departments. The Public Garden well illustrates this. Constant daily attention is given to the flower-beds, which are weeded and pinched and cut religiously, while the grass is allowed to be overrun with weeds, the edgings of the walks are

neglected, insects swarm upon the trees, and the pond and fountain-basins are foul and filled with rubbish. The tropical plants stuck about the garden, to which our correspondent calls attention, are a new feature, which, with the hardy and half-hardy shrubs, plunged in pots wherever a place can be found for them, only serve to decrease its beauty and diminish its real usefulness. The money which it costs the city to buy these plants, and build and heat the green-houses in which they must be stored in winter, might be spent more wisely in destroying injurious insects or in cleaning the filth from the pond. The Boston Public Garden is visited by thousands of people every week. Its educational importance, therefore, is great—greater, probably, than that of any other garden of its size in the United States. It is a misfortune, therefore, not only for the people of Boston, but for those of the whole country, that it cannot be made to express the real meaning of what such a garden should be.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Referring to the article on "The Street Trees in Washington," in *Harper's Magazine* for July, let me say that nine years ago I examined these trees in company with the late Dr. John A. Warder. We thought it a good idea to plant these common, rapidly-growing trees to make shade, while valuable trees, that grew more slowly, were being established, and regretted that they were planted so closely as to give insufficient room for the permanent trees that we supposed would be planted between them to take their places. It seems from Mr. Peter Henderson's remarks that these trees were intended to remain. Of the 63,014 trees planted, 43,914 are of Silver Maple, Box Elder and Poplar. The climate of Washington would admit of a selection of street trees that could not endure the climate of our Northern cities. In that climate especially trees should be selected which hold their leaves fresh in the late summer months. The Silver Maple, Box Elder and Poplars (over two-thirds of the whole number planted) are certainly not the best that could be selected on that account. Compare them in this respect with the Sugar Maple, the Cucumber tree, "*Magnolia acuminata*," the Tulip tree, the Oaks and many others.

The foliage of the Silver Maple is poor in the late summer compared with the above named, and, besides this, the branches are brittle, and the trees are disfigured with broken and dead branches before growing old. The foliage of the Box Elder is quite dense and rich in color early in the season, but never fresh in the latter part of the season after it has reached the age of twenty-five or thirty years, and especially away from the margins of streams. Nearly all the Poplars, with the exception of the Lombardy, are a nuisance in the streets in early summer, shedding their down like rain upon the just and the unjust.

If longevity is taken into consideration, how will the Silver Maples, Box Elders and Poplars appear when fifty years old? Here where I write (Hanover, New Hampshire) the White Elms and Sugar Maples, a hundred years old, line the streets, and are noble trees still. Does any of these 43,914 trees compare with the White Elm? Will any one of them endure the city smoke better than the White Elm? I am not finding fault with what has been done, I only wish to call attention to what has not been done. No trees would make a shade quicker nor so cheaply as these 43,914 trees, and if they shade the streets for even twenty years they will have paid their way, but it is already time to arrange for filling their places. Seeds of trees of valuable and durable kinds should be sown now, the trees grown and transplanted, with plenty of room, so that they will be strong and vigorous before being planted into the intermediate spaces. Then the soft-wooded trees can be cut back on the sides, more or less, allowing the newly-planted ones room to become well established, and by that time the White Maples, Cottonwoods and Box Elders will be in a failing condition.

Robert Douglas.

[This letter was written before Mr. Douglas had seen an editorial article on the same subject in this journal.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—The quotation from an article entitled, "Among My Weeds," in a recent issue of GARDEN AND FOREST, brings to mind some "weeds" of my own cultivating—among them the Poke. It is a matter of wonder that the Poke has not a place in beds where strong, vigorous plants are growing. It is an exceed-

ingly distinct and picturesque plant. The rich colors of its stem and its graceful manner of growth are especially noticeable. A marked trait is, that on the same spray, where the berries are ripe, there will be not only green berries, but flowers and buds. The stem of the spray alone is remarkable for beauty. I have stripped them of the berries and arranged them in a vase-bouquet, and every one was desirous of knowing what the new and rich-colored thing was. So with the flowers, which are unique and pretty. A party of visitors once gathered around a plateau of flowers in which I had arranged the Poke blooms, and were curious to know what sort of Wax-plant it was. The odor of the plant is not pleasant, but this is slight in the flower, if at all noticeable. I raised my crop of Poke from seed, but as the plant is perennial, it will come up from year to year, faithful to the appointed time.

Palmyra, N. J.

H. V. A.

Recent Publications.

Bulletin of Miscellaneous Information.—Royal Gardens, Kew, No. 19, July, 1888.

This, the last number of the useful publication which has reached us, like its predecessors, is filled with valuable information. It contains, among other articles, the following: On Bhabur Grass (*Ischæmum augustifolium*), with a figure, a plant closely resembling the well-known Espartu Grass in habit and in qualities, which make it valuable in the manufacture of paper. Bhabur Grass is a native of northern India, where it grows on dry, bare slopes, and is used mostly in the manufacture of cordage. It is believed that this plant, were it cultivated on a large scale, might become important in furnishing excellent material for paper-making, and that it can be easily cultivated this paper gives abundant evidence.

(2) On the Cayman Islands, a group of three small islands—Grand Cayman, Little Cayman and Cayman Brac—situated in the Caribbean Sea about 200 miles west of Jamaica, and rarely visited by travelers. They contain, however, a population of more than 4,000 persons, who are described as temperate, strong, tall, healthy-looking people, chiefly white or colored, "and who are doubtless descended from the original settlers of the last century." The population of black people is comparatively small. The vegetation of their islands is similar to that of Jamaica, as are the crops, which are principally Sugar-cane and Cocoa-nuts.

(3) On the Prickly Pear in South Africa, being a discussion of the best methods for exterminating the Prickly Pear from South African fields, and of the uses to which these plants can be applied, by Prof. MacOwen, director of the Botanic Garden in Cape Town in South Africa. It is based upon the rapid spread of the Prickly Pear, as one or more species of *Opuntia* are called, in all dry regions of the Old World. These plants are of American origin, but they are as much at home in the Old World as on their native Mexican plateau. They render the land they occupy worthless for all purposes of agriculture, and it is becoming, therefore, a matter of real importance to determine how such plants are to be effectually eradicated at a small cost, or if they cannot be eradicated, how they can be profitably cultivated.

There are also articles in this issue upon *Valonia* (the acorn cups of *Quercus Ægilops*), of which large quantities are imported annually into England from Greece and Asia Minor, and upon Star Anise—*Illicium verum*.

Recent Plant Portraits.

CATLEYA WALKERIANA, *Revue de l'Horticulture Belge*, June. Rhododendron MAIDEN'S BLUSH, *Revue de l'Horticulture Belge*, June; one of the earliest of the race of green-house Rhododendrons raised by the Messrs. Veitch, and derived from *R. javanicum*.

HAKEA LAURINA, *Bulletino de la R. Societa Toscana di Orticultura*, June.

Rose BARDON JOB, *Journal des Roses*, May; a handsome Tea Rose, with semi-double scarlet flowers, raised from the well known Gloire des Rosomanes by Narbonnard & Sons, of Golfe Juan, and recommended as a strong-growing pillar Rose, or for bedding.

BAHIA (ERIOPHYLLUM) CONFERTIFLORA, *Gartenflora*, June 15th; a half shrubby Californian Composite, with small heads of yellow flowers.

CHEENACTIS TENUIFOLIA, *Gartenflora*, June 15th; a loosely-branched, diffuse Composite from the coast of southern California, like the last, of little horticultural interest.

ANTIARRHINUM NUTTALLIANUM, *Gartenflora*, June 15th; a late

California species, with slender, sprawling branches, small leaves, and minute purple flowers, of no interest as a garden plant.

TRICHOPILIA LEHMANNI, *Gartenflora*, July 1st.

ZYGOPETALUM BRACHYPETALUM, var. STENOPETALUM, *Gartenflora*, July 15th.

ASTER ALPINUS, var. SPECIOSUS, *Gartenflora*, July 1st; a stately variety of a well known and widely distributed plant, discovered by Dr. Albert Regel, on the high mountains of central Asia.

GLOXINIA GESNERIOIDES, Charles Schubert, *Wiener Illustrirte Gartenzeitung*, June.

IRIS KOROLKOWII, *Gardener's Chronicle*, July 14th.

PINUS SABINIANA, *Gardener's Chronicle*, July 14th; the well known Digger Pine of California, figured from a specimen grown in the gardens of the Villa Thuret, at Antibes, in the south of France.

OSTROWSKYA MAGNIFERA, *Gardener's Chronicle*, July 21st; a wonderful Campanulaceous plant, discovered by Dr. Albert Regel on the mountains of Chanat Darwas, in eastern Bokhara. "It is a hardy perennial, with tuberous roots. As shown, the stem is three feet in height, green, sprinkled with small red spots, with four-leaved whorls at intervals. The leaves are glabrous, rather fleshy, shortly stalked, oblong-acute, coarsely toothed. The inflorescence is cymose, the flowers on long stalks, at first pendulous, afterwards nearly erect; when fully expanded they measure five and three-quarter inches in diameter. The plant, despite a paleness of color in the flower, is certainly one of the finest herbaceous plants ever introduced, and as there can be no doubt as to its hardihood, and little or any as to its adapting itself readily to cultivation, it is sure to become a popular favorite."

The plant from which this illustration was made was exhibited by the Messrs. Veitch at a late exhibition of the Royal Horticultural Society of England.

Notes.

A young Apple-tree in a yard on Washington Street, near Eggleston Square, Boston, was in full flower on the 2d of September.

Mr. Albert Koebele, an agent of the Entomological Division of the Department of Agriculture, has sailed for Australia to study the parasites affecting the cottony cushion scale, especially in the interest of horticulture in California.

It is expected that not more than one million pounds of tobacco will be raised in Egypt this year, although, on the average, thirteen million pounds have been produced in former seasons. The decrease is owing to the recent action of the Khedive in putting a tax of \$157.50 on each acre of ground devoted to this crop.

At the late convention of Florists a resolution was adopted to the effect that it would be of great advantage to the trade if manufacturers would unite to make pots of uniform size, and members of the Society are invited to sign a circular stating that henceforth they propose to use no other pots than those of the standard size adopted by the Society. A copy of this circular is to be sent to all the potters in the country.

Mr. John J. Thomas reports in the *Country Gentleman* that an orchard of Bartlett pears, in which the trees were sprayed with Paris green, show scarcely a defective specimen of fruit, while on another tree, forty rods distant, which was not treated with the poison, nearly every pear is disfigured by the codlin worm in the core and by the curculio on the surface. The Bartlett pear, from its earliness and texture, is particularly liable to attacks of the curculio.

Mr. F. W. Burbidge describes, in a recent issue of the *London Garden*, an interesting specimen of the Sycamore Maple, with bright red fruit, growing in a garden near Dublin: "The tree itself in growth resembles the type, but the leaves are smaller and of a more shining or glossy green, being glaucous behind. The leaf-stalks or petioles are bright red, and the fruits, instead of being in dense or short clustered racemes of a greenish hue, are borne in long-stalked clusters, and are red, verging on crimson when fully exposed to the sun." Nothing is known of the history of this tree.

In speaking of the Rose American Beauty at the Florists' Convention, Mr. Edwin Lonsdale said that it could be obtained from January till December, and not September, as was reported. The fact that it can be had at all seasons gives this Rose a special value, although, in order to give a fair profit, where artificial heat is needed, it ought not to sell at wholesale

for less than twenty-five dollars a hundred. Mr. Lonsdale finds that in some cases it does better the second year after planting. American Beauty is at this time the main dependence of New York florists for long-stemmed Roses, and brings at retail from three to four dollars a dozen.

The *Revue Horticole*, in a recent issue, calls attention to *Choisya ternata*, which it considers the most desirable of all early spring-flowering shrubs. It is a Mexican evergreen, belonging to the same family as the Orange, with beautiful, dark green, shining foliage, corymbs of numerous pure white, deliciously fragrant flowers, which are produced in the greatest profusion during the months of April and May. The flowers remain fresh for a long time when cut and are well adapted for bouquets. This plant is not, unfortunately, hardy in the Northern States, but it would probably succeed anywhere south of Virginia, or in California, where it will, doubtless, find itself perfectly at home.

Hybrid Gladioli were again the floral feature at the meeting of the Massachusetts Horticultural Society, held on the 1st of September. Mr. J. Warren Clarke duplicated his remarkable collection of seedlings shown the previous week; and Mr. James Cartwright, of Wellesley, sent an equally large collection of almost equal merit. Indeed it would be difficult to say which of these two collections contained the largest number of really valuable varieties. Mr. Hunnewell exhibited a dish of twelve Late Crawford Peaches from his orchard-house. The twelve weighed six pounds six ounces, the largest measuring eleven and a half inches in circumference and weighing eleven and a quarter ounces. Such a dish of Peaches, it is safe to say, has never been seen in Boston before. A dish of Red Bietigheimer was conspicuous in a large collection of summer Apples, exhibited by Mr. Samuel Hartwell, of Lincoln. This is one of the largest and handsomest of the summer Apples, with a smooth, whitish-yellow skin, beautifully shaded with red. Its firm texture and sub-acid flavor, however, make it a better cooking than dessert fruit.

The second annual convention of the Association of American Cemetery Superintendents was held in the Clarendon Hotel, Brooklyn, last week. At the meetings on Wednesday and Thursday a number of papers of great merit were read on important subjects of practical interest. Among them were the following: "An Ideal Cemetery," by Mr. F. Eurich, of Toledo, Ohio; "Landscape Gardening in Cemeteries," by Mr. R. D. Cleveland, of Minneapolis, a son of Mr. H. W. S. Cleveland; "Lawns," by Mr. W. Salway, of Cincinnati; "Roads," by Mr. O. C. Simonds, of Chicago; "Green-houses and Flowers," by Mr. J. E. Barker, of Boston. The members of the Board of Officers—whose names and addresses have been given in an earlier issue of this journal—were unanimously re-elected. It was decided to hold the next convention at Detroit, in the third week of August, 1889. This association is an organization, the existence of which is full of promise for the better ordering and management of American cemeteries, and it will doubtless have an increasing measure of support from the superintendents and trustees of cemeteries throughout the country.

Every one who has visited Montreal in August will remember the enormous Cantaloupe Melons and their fine flavor. They are almost round, flattened at both ends, deeply ribbed; the skin green and netted, and the green flesh very thick. After some ineffectual attempts by Boston dealers to import these Melons, the growers about that city have been making experiments with them, and Mr. W. H. Allen, of Arlington, has achieved a striking success. According to the *American Cultivator*, he imported his seed direct from Montreal and started them under glass with a moderate bottom heat. In fact, he kept the melons under glass as long as he could. One important point in their culture is to water the vines freely, yet after the Melons commence to form, the fruit should not be wet. The growers in Montreal place a small pane of cheap glass under each Melon to prevent contact with the earth. Mr. Allen and other successful growers about Boston always import their seed each year direct from some trustworthy concern in Montreal. Mr. Allen produced fine, ripe specimens this year as early as August 1st, two or three weeks earlier than the ordinary Cantaloupe. He sold the largest and most perfect-shaped Melon of the variety ever seen in Quincy market for three dollars. It weighed nearly thirty pounds. He sold them by the box at one dollar and twenty-five cents each, weighing eighteen to twenty pounds to the melon. The price soon dropped to one dollar each and is now about seventy-five cents.

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The Rejuvenescence of Old Trees.

THE fact that old and apparently decrepit deciduous trees can be rejuvenated by judicious pruning, is not well understood in this country, where old trees, which might perhaps be made to live a century or two, are often allowed to perish unnecessarily. The death of a tree can generally be traced to a gradual failing of vigor due to insufficient nourishment, or to internal decay, the result generally of neglect. The first indication of danger usually appears at the top, and when the upper branches of a tree begin to die, it is a sure indication that, unless radical measures are taken to check the trouble, it can only live a comparatively short time. Vigor can be restored to a tree in this condition by shortening all its branches by one-third or one-half of their entire length. The only care needed in this operation is to cut back each main branch to a healthy lateral branch, which will serve to attract and elaborate, by means of its leaves, a sufficient flow of sap to insure the growth of the branch. This is essential in good pruning, and, if neglected, the end of the branch will die back to the first lateral branch or bud below the cut, leaving a point of danger to the tree. Care, too, must be taken to shorten the branches in such a way that the lowest will be the longest, that the greatest possible leaf surface may be exposed to the light. Figure 1 will serve to show how an ancient Oak should be pruned for the purpose of increasing its vigor.* The vigor of a



Fig. 1.

* We are indebted to the Trustees of the Massachusetts Society for Promoting Agriculture for permission to reproduce these figures, which are extracted from Monsieur A. des Car's work upon Tree Pruning, of which an English edition was published in 1881, by the Massachusetts Society, under the title of "A Treatise on Pruning Forest and Ornamental Trees," a work in which the whole theory of pruning is clearly explained and illustrated.

tree depends upon the power of its leaves to elaborate plant food. The larger the leaf surface exposed to the light, the greater will be the vigor of the tree. The object of pruning, therefore, is to increase leaf surface. If half of a branch of a decrepit tree, bearing small and scattered leaves, is cut away, the leaves which will grow upon the half which is left will be so large that their total area will often be more than double the total area of the leaves upon the whole branch before it was cut. The truth of this statement can be easily verified by cutting down to the ground in the spring a feeble seedling Oak, or, indeed, any young seedling tree, when a tall, vigorous shoot, twice the height and diameter, perhaps, of the slender stem it replaces, will appear at the end of a few months, and,

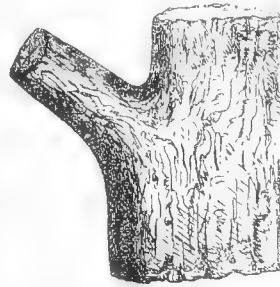


Fig. 2.

although this shoot will only produce a few leaves, its greater vigor is due to the fact that a larger leaf surface is presented to the light by these few large leaves than by the more numerous smaller leaves of the original plant. The vigor, too, of a tree, can be increased after it has been pruned by a good top dressing of well rotted manure, or of fresh soil applied over its roots; and trees growing on banks can often be benefited by deepening the soil on the lower side. A large body of plant food can thus be supplied without burying any part of the trunk and without injury to the tree.

The internal decay which so many old trees perish, through inability to resist the influence of storms, is caused by dead branches allowed to remain upon the tree or from the stumps of branches left in pruning. It is an almost invariable custom in this country, when a branch is cut from the stem of a tree, to leave a stump a few inches long, as shown in Figure 2. The end of this branch, as it has no lateral shoot to insure a flow of sap, is not healed over with a new formation of wood and bark, and soon dies. Decay thus begins, as appears in Figure 3, and this decay gradually extends into the interior of the trunk, as shown in Figure 4, ruining the tree for any useful purpose, and so weakening the supporting power of the stem, that a severe gale will prostrate it. This decay can be prevented by cutting off dead branches as fast as they appear, and by cutting living branches, when it is necessary for any reason to remove them, close to the trunk or close to a lateral branch. The secret of good pruning lies in cutting close, so that the wound may heal by the formation of a new growth over the cut surface. No matter how large it may be necessary to make the wound, no branch stump, large or small, should be left in pruning. A coating of coal-tar applied to the wound as soon as made will serve to protect it from moisture, and will not interfere with the formation of a new layer of wood.



Fig. 3.

Pruning, so far as the trees are concerned, can be done at any time, except in very early spring, when they are gorged with sap and "bleed" more freely than at other seasons of the year. The autumn, however, is found to be the best time for such work. There is more leisure now than earlier in the season, while the coating of ice which often, in this climate, covers the branches of trees in winter, makes it difficult and dangerous to work among them.

Three men at least are needed to prune a large tree properly, and to manage the long, heavy ladders which this operation makes necessary. One man stands at a little distance from the tree and directs where the cuts

shall be made; the second man uses the saw, which must be attached often to a long handle; while the third holds one end of a rope fastened to a belt on the man in the tree, and passed over a branch above his head as a precaution against a fall. Nearly all our forest trees bear severe pruning of this sort, and improve under it. Decrepit Red, Black, White and Swamp Oaks, Black Birches, Beeches, Hickories and Elms have been pruned in this way in the Arnold Arboretum, where many of the trees in the natural woods were perishing from pasturage and neglect. They were covered with dead branches, the foliage upon them was thin and poor, and their dying tops showed that they had but a short time to live. It was important to preserve many of these old trees until a new growth of self-sown seedlings could be brought on to replace them and a covering to the forest floor grown. A portion of these old trees are pruned each year, and those which were operated upon first, or six or seven years ago, show, in their dense, dark-colored foliage, compact habit and vigorous growth, how pruning can, without fresh soil and without the aid of manure, put new life into feeble and dying trees.

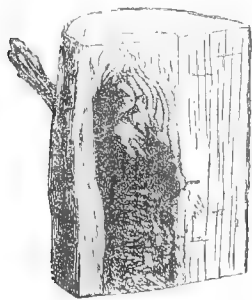


Fig. 4.

It often happens that when trees have grown together thickly, as in a forest, they are destitute of lower branches. When such trees are thinned, as often happens in the improvement of grounds, single specimens are left with long, straight stems, and without foliage except at the very top. Such trees, from the point of view of ornamental gardening, are ugly objects, and are, moreover, liable to blow down in the first gale.

But there is no deciduous tree, however tall and unsightly it may be, which cannot be gradually converted into a handsome, branching specimen, by the aid of a saw and a pot of coal-tar.

Flowers in Japan.—II.

THE nurseries of the gardeners who supply the Japanese with the immense quantities of flowers, shrubs and trees they demand are scattered about in the suburbs of the cities. They are well kept and contain a great variety of plants, the most valuable of which are usually very old, dwarfed trees. Singular objects, which are greatly prized, are very old trees, which, to all appearances, are quite dead, but still retain sufficient vitality to send forth a few fresh blooming shoots each spring. Good specimens of such trees are not common, and, on several occasions when I found an unusually fine one, I was told by the gardener that it had been in the possession of his family for two or three generations. Rarity, in Japan, as elsewhere, constitutes a virtue, as I found with regard to some of the most highly prized and expensive plants I saw, the chief recommendation of which was by no means their beauty. A small plant, consisting of half a dozen coarse, Pampas-grass-like blades, was pointed out to me by a gardener as one of his most valuable possessions, his price being 300 yen (about \$250). Upon observing my look of astonishment, he assured me that this was not at all an unusual price, and that in former times he might have sold it for double that amount. I was somewhat incredulous, but I learned later, on trustworthy authority, that this was not a fictitious value. These gardeners also arrange flower-shows in their gardens from time to time. One of them, whose place I frequently visited, held an annual Pæony exhibition, which enjoyed more than a local reputation. The potted plants were placed under a light bamboo awning which extended around three sides of the garden. The flowers were placed on step-like shelves, which showed off each plant

distinctly. The exhibition was always announced by the newspapers and was generally largely attended. Over 200 varieties, each represented by the most perfect specimens, were shown. There are also numbers of private gentlemen who devote themselves to horticulture and who give annual exhibitions of their productions.

But the most wonderful and elaborate displays of this kind are given every spring and autumn by the Mikado at his private gardens in Tokio, the former being devoted to a view of the Cherry blossoms and the latter and most attractive to a Chrysanthemum show.

Of late these entertainments have assumed a semi-European character. Four years ago, when I attended one of them, the Empress and her ladies appeared in the picturesque and unique old court dress, but now that has been superseded by the European style, which, as can be imagined, deprives the occasion of much of its former charm and interest.

The entertainment is given in a large park-like garden, where a collection of the most varied and perfect specimens of the Chrysanthemum are on exhibition. A number of light, neatly constructed bamboo sheds are erected, and underneath, on the tiers of shelves, specimen after specimen of every possible variety of this favorite flower is shown in the greatest perfection. These plants, each in a separate pot, bear only two or three flowers each, the others having been nipped in the bud in order to bring the few remaining ones to the greatest development. There are, however, a few exceptions, consisting of plants each of which bears several hundreds of very perfect, though smaller, flowers; and, as the stem of every individual flower is strengthened by means of a fine strip of bamboo and drawn by a thread in a position to show it to the fullest advantage, they seem even more numerous than they are. One of the causes that have tended to make the Chrysanthemum such a favorite, may be the fact that it is the last of the long series of Japanese flowers, and continuing until covered by winter's snow. The Chrysanthemum also forms the Mikado's official crest.

Another exhibition of the Chrysanthemum, consisting of large figures, made up entirely of these flowers, of different colors, is very popular with the masses. Several months in advance of the Chrysanthemum season the frame-work of great figures, ranging from life-size to thirty feet in height, is constructed of wood and bamboo. Over this frame-work is a covering of rough wicker-work which outlines the forms of the figures. The head, hands and feet are made of *papier maché*, colored like life. The wicker-work interior is then filled in with great quantities of Chrysanthemum plants in bud. If, for instance, one of these figures is to be represented in a white garment, then the whole surface of the figure is filled in with white flowers. If embroidery is to figure thereupon, the effect is produced by variously colored flowers—yellow to represent gold, etc.—and as the embroidery generally consists of floral designs, it is readily produced by flowers of the shade required. The plants are placed inside of the wicker-work covering, with the thickly massed buds protruding, while the roots are inside. The interior space is then filled with earth, and when the solid masses of blossoms burst into bloom, they form a most harmonious glow of color, and so skillfully are they arranged, that the effect, at the proper distance, is quite deceptive, and gives one a very fair representation of richly embroidered costumes.

These figures are arranged singly and in groups, and represent, as a rule, mythological and historical characters. A favorite among these characters is the great hero, General Benke, in the act of slaying an enormous dragon. Another represents a fair courtesan in rich attire, accompanied by her little maid, who stops and gazes with consternation at an old priest who slowly approaches, and prophetically holds a grinning skull before her. A junk of almost natural size, with life-size figures, generally forms one of the most elaborate representations. Wrestlers

in life-like action, solemn gods and goddesses, without number, are here presented in floral attire, to the admiring multitude who flock in thousands to the spot.

New York.

Theodore Wores.

A Woodland Tragedy.

TO the conscientiously scientific student of Nature everything that grows may possibly be of equal interest at all times. But I think that for all desultory observers like myself there is sure, from week to week, to be some new thing which, at the moment, specially touches the fancy and seems more interesting than everything besides. A while ago I was all for the Heaths. Any one of their kindred seemed enchanting, and nothing else seemed half so much so. Just now the Sundews have taken their place in my affections. *Drosera rotundifolia* is our common species. This, of course, is one of the things that must be looked for; but if one looks it appears in a hundred spots, each of more fairy-like loveliness than the other. Tiny islets of moss set around with low Blueberry bushes in half-swampy meadows are its favorite stations, where it forms little clumps of half a dozen plants. But I have found one spot where it grows in much greater profusion. Far back from the high-roads, through a wide-spreading growth of young trees and thickly intermingled shrubs—a growth too young as yet to be called a forest—runs an abandoned road, green now over all its length, and often to be traced only by the fact that it lies a little lower than the general surface of the ground. Along this road, at a place which is swampy after rain but dry enough in time of drought, the moss is tangled with Cranberry vines and spotted with patches of Sundews, while if one stoops and lifts the curtain of shrubs and creepers which overhangs the little foot-high embankment on either side, its face is found to be clothed for yards with the round, red, bristly little leaves, each tiny hair bearing its drop of glue, like a diamond awaiting some Titania's ear. Of course the fact that these miniature, jewel-like arrangements are murderous arrangements is what makes them so attractive. Modest and retiring though it is, this tiny plant gives us a chance to see a bit of the great world-drama called the struggle for life in vivid action. Although we know that one plant always lives by the death of another, we do not often see this truth in clearly visible shape. When we do, as when a Dodder is sucking the life out of some tender stem, we suddenly find our interest in vegetable development intensified; and when it is not a plant but an animal that succumbs, the interest grows positively tragic in strength. We may poison or catch flies by hundreds in our rooms and never think of such words as fate or the struggle for existence—the forces in conflict are too unequal. But watch a little, lovely Sundew leaf when a tiny fly alights upon it, sit patiently for some thirty minutes until the insect disappears in a tight, little, red, clammy fist, and the whole panorama of the world's history seems to unroll before the imagination. Perhaps it is because here the usual results are reversed, and, animal and vegetable forces coming in conflict, the weaker-seeming prevail; perhaps it is simply because we seldom think of plants as acting at all, and suddenly find them in what looks like conscious effort; but, whatever the reason, it must be a dull mind that is not thrilled with a sense of the interdependence of all created things, of the awfulness of Nature's methods, the irresistible force of fate, the iron rule of the law that nothing can live but by the death of something else, when he sees a Sundew clasp its victim. Do such words sound too big for so small a drama—for a catastrophe which can be hidden by the curl of a Fern-tip or the fall of a Blueberry leaf? If so, it is because you have never looked long enough at tiny things to realize that what we call size counts for nothing in Nature's mind, whether beauty or significance be her aim, and have never, while realizing this, seen a Sundew catch a fly.

M. G. van Rensselaer.

Marion, Mass.

Foreign Correspondence.

London Letter.

THE trial plots in the gardens of the Royal Horticultural Society at Chiswick, a few miles from the centre of London, are now full of interest to gardeners and all interested in fruits, flowers or vegetables. For years the Society has made trial of important flowers, fruits and vegetables in order to test their qualities. They invite the principal nurserymen and seedsmen to send collections of particular classes, including their novelties, and all are grown under as suitable conditions as is possible, so that a fair test is given to all, and as the garden of the Society is neutral ground, the trials have much value both to tradesmen and to the gardening public. The subjects vary from year to year. Sometimes it is Peas among vegetables; Strawberries among fruits; Pelargoniums or Begonias among flowers, the subjects being chosen according to their importance, their popularity or the state of the nomenclature of their varieties. By these means one is able to see and inspect in a small area a collection of many varieties, and in this way comparison of qualities can be easily made. These public trials also furnish a check upon the nomenclature, especially in reducing synonymy. For instance, last season, Tomatoes were put under trial. There was a multitude of named varieties, but at judging-time the Committee found so many identical that the number of distinct kinds was very small. This is good work, as it enables the amateur to select the best and shun the worthless sorts.

Among the subjects under trial this year in the way of flowers are China Asters, Ten-week Stocks and bedding Lobelias, and I have to-day been included in the Committee whose work it is to judge these. We found an enormous array of China Asters and Stocks, probably a hundred named sorts, all growing side by side in lines precisely under the same conditions, raised at the same time and planted out simultaneously, and all received the same cultural treatment. The principal exhibitors were, of course, continental firms, as we do not in England save our own China Aster or Stock seeds. Messrs. Vilmorin-Andrieux & Co., of Paris, and Messrs. Benary, of Erfurt, sent most of the seeds for trial, the collections of both being admirable, and it was difficult to say which was best. One who had never seen great collections of these flowers would be astonished at the great diversity of stature, of habit and of color among them. The practice of the Committee is to denote the qualities of the subjects by marks. Thus, one mark is given for good habit of growth, one for form of flower, one for richness, distinctness of color, and so on; but, as a rule, only those sorts that can command three points—that is, are good in habit, in flower and in color—are considered, and the three marks are taken as equivalent to a first-class certificate.

The Ten-week Stocks were a difficult class to judge, as there is such a difference in habit and color among them. I will not attempt to enumerate all the varieties which were counted worthy of a triple distinction, but will select a few. The best of all were comprised in the tall, large-flowered section. The spikes of bloom are massive, and the flowers perfect rosettes, while for profusion of bloom and compactness of growth they are faultless. The selected sorts were blood-red, sulphur-yellow, lilac, violet, light violet and purple, all of which were sent by Vilmorin. Benary's collection contained some very charming colors, and what pleased me most were the subtle half tones, which, I fear, many, who like only distinct and bright colors, would not admit into gardens. One called Ash-gray was a peculiar shade of grayish purple, quite indescribable; another called Chamois was a soft fawn tint, and others called Lilac Rose and Mauve Purple are most beautiful. The difficulty is to find names for them all. The attempt to describe the colors by the names is often a failure, while to give fancy names to each would be absurd and lead to confusion. Some of the dwarf sorts were exceptionally fine, the plants

being not more than six inches high and complete masses of bloom, and one double white variety was singled out as the best of all the dwarfs. The Wallflower, cleaved section, which have shining, not hoary, leaves (as in ordinary Stocks), are a failure as far as this trial is concerned, and so is what is called the Dwarf Bouquet section. They are not to be compared with the tall and dwarf double-flowered sorts.

Among the China Asters we found only a few that were in a fit condition to judge, the plants not being in full bloom. But these very early kinds in full bloom just now are of great value, as they prolong the China Aster season, and what we want is a very late strain which would extend the season over six or eight weeks. The dwarf strains are very popular, as they are compact in growth and extremely floriferous. A few uncommonly fine ones received to-day the full number of marks. Among these in the Dwarf Chrysanthemum section were: Crimson, Scarlet Red, Rose and White, all with large, full flowers, abundantly produced on plants about nine inches high. There is also a strain called the Dwarf Queen, ranging through crimson, carmine rose, purple and white. But the most beautiful Asters, in my opinion, are yet to bloom, and we shall inspect these a fortnight hence. These comprise the Pæony-flowered, Tall Chrysanthemum-flowered, Victoria, Pyramidal, Quilled Pompone and Cockade sections. These China Asters seem to become more popular every year since such fine strains have been obtained. They are capable of producing very beautiful effects in the flower-border and require the simplest culture. The present moist season has suited them well, as they have seldom been finer at Chiswick.

No advance whatever seems to have been made lately in improving the bedding Lobelias, as the varieties on trial, including novelties, do not show any improvement over the old strains.

A collection of Tomatoes is again on trial and a wonderful display of fruiting plants is to be seen. The principal house (100 feet by 30 wide) is crowded with plants in beds and trained to upright stakes. They range from six feet to ten feet high and are profusely hung with fruits, though only to-day 200 pounds had been cut. Of the almost countless varieties two stand out prominently as the finest of the collection. One is called Horsford's Prelude, an American variety, having been sent by Messrs. Horsford & Pringle, of Vermont. It is a wonderfully productive sort, the fruit numbering as many as a dozen or more in a cluster, hanging at regular intervals all up the stem. The fruit is of medium size, smooth, bright red, very succulent and of good flavor. It is pronounced first-class, and is likely to supersede all others, especially for the market. The other favorite sort is Perfection, known under numerous aliases, for it is so good that every firm seemed anxious to call it their own Perfection. It is a very large sort, with perfectly smooth fruits, very fleshy and well flavored. It is showy, and therefore gains a point upon Prelude, though it is not so productive. The value, however, of such a fine fruited sort, is that the fruits fetch fully a penny a pound more in the market than the small kinds, like Prelude, which sells at the moment at six, while Perfection sells at seven pence per pound. A prolific sort is President Garfield, called also King Humbert and Chiswick Red, but it is nowhere, now that Prelude is in the field. All credit is due to the American seedsmen for sending us such a valuable fruit.

London, August 24th, 1888.

W. Goldring.

New or Little Known Plants.

Pseudophœnix Sargentii.

ON the 19th of April, 1886, in company with Mr. C. E. Faxon, Mr. A. H. Curtiss, and Lieut. Hubbard, of the United States Navy, I landed from the Light-house Tender "Laurel" near the eastern end of Elliott's Key, one of the

larger of the Florida Reef Keys, at the house and Pineapple plantation of Mr. Henry Filer. Our attention was at once directed to a solitary plant of a small pinnate-leaved Palm, left standing in the clearing, which, at first sight, was mistaken for an *Oreodoxa*, but the large orange-scarlet fruit at once showed that we had stumbled upon a tree unknown before in the North American Flora, and quite unlike any of the species of Palms known to us. Specimens of the fruit, which was not, unfortunately, fully ripe, were sent to Dr. Wendland, of Hanover, who provisionally pronounced our Palm to be the representative of a new genus, for which he proposed the name of *Pseudophœnix*. A short account of this discovery, with the announcement of Dr. Wendland's new genus, but without characters, was published in the issue of the *Botanical Gazette*, for November, 1886, but it was not until a year later that I received through Mr. Curtiss ripe seed of the *Pseudophœnix*, which was sent to Dr. Wendland, who has drawn up from it generic characters.*

Pseudophœnix Sargentii is a slender, low tree, twenty to twenty-five feet high, with a trunk ten to twelve inches in diameter, and abruptly pinnate leaves four or five feet long, the pinnæ lanceolate-acuminate, twelve to sixteen inches long, bright green above and glaucous on the lower surface. The branching spadix appears from among the leaves; it is (in the only specimen seen by me) thirty-six inches long by thirty inches broad, the main and secondary branches light yellow-green, flattened, and the latter thickened at the base, especially on the upper side, into an ear-like process. The three-lobed fruit, often one or two-lobed by abortion, is a half to three-quarters of an inch in diameter, bright orange-scarlet, and very showy. Only the withered remnants of the flowers have been collected.

A few individuals were discovered scattered through the woods in the neighborhood of Mr. Filer's plantation, and, late in the same year, a grove of them was discovered near the east end of Long's Key by a gentleman from Bay Biscayne whose name I cannot recall. There are about 200 plants, large and small, in this grove, which is represented in the illustration upon page 353, from a photograph made by Mr. James M. Codman at the time of our visit to Long's Key in the spring of 1887. These are the only stations where *Pseudophœnix* is now known, but as the flora of the Florida Reef Keys is Bahaman in its constitution, and probably in its origin, it would be a singular fact if this tree was not found in some of the Bahama group, the plants of which are still very imperfectly known.

The figure of the fruit (see page 355) is engraved from a drawing made by Mr. Faxon.

C. S. S.

Cultural Department.

Cultivation of Native Ferns.—IV.

Aspidium Goldianum.—As Eaton says, "This is one of the very finest and largest species of the Eastern States." In even choice collections this species will always be one of the prides of the owner on account of the size, color and beauty of the fronds and comparative rarity of the species. Its early summer growth is tipped and bordered with vivid golden green. The mature frond takes on a deep, rich green of much beauty. Rich soil. Two and a half to four feet. Fronds on one fine specimen measure four feet two and a half inches.

Aspidium Filix-mas.—A strong, fine-growing, half-ever-green species of great beauty. Under high cultivation this produces splendid masses of fronds. Thirty to forty inches.

Aspidium marginale.—An attractive common species. The half-evergreen fronds grow in a handsome vase form. Grows finely in rich soil; but will grow in extremely poor and dry situations. Eighteen to twenty-nine inches.

* *Pseudophœnix* Nov. Gen., Herm. Wendl. Gaussire affinis.

Fructus stipitatus drupaceus cerasiformis aurantiacus, e carpellis 1-3 globosis stigmatum residuis basilariibus vel in fructibus lobatis lateraliibus vel centralibus, epicarpio coriaceo, mesocarpio grumoso, endocarpio tenuiter vitreo-crustaceo. Semen liberum subglobosum erectum, hilo basilari, raphe ascendente utrinque ramis 2-3 manifestis curvatis, albumine æquabili: embryo basilari.

Fl. fem. in fructu: calyx parvus pateriformis leviter 3-denticulatus. Petala 3 ovata obtusa, viridia refracta. Staminodia 6 manifesta apice atropurpureo.

— Palma mediocris, erecta, foliis pinnatisectis, segmentis duriusculis ima basi valde repliatis.

Species 1. *P. Sargentii*, Herm. Wendl. Elliott's Key, Florida.

Aspidium spinulosum.—This common and handsome sub-evergreen Fern is one of the mainstays of the Fern garden. In good soil well established plants send up abundant fronds to a good height from the stout root-stock. Of easiest possible culture, growing finely even in poor and dry soil. Two to two and a half feet. The varieties *intermedium* and *dilatatum* are both as desirable as the type. A fine plant of the latter variety measures thirty-seven inches in height.

Aspidium Boottii.—Very close to *A. spinulosum*. Remarks and culture the same as for that species. Two and a half feet.

Aspidium fragrans.—This rare Fern is difficult to cultivate; one can hardly expect to grow it more than a few years. Evergreen. Plant in rather dry, well-drained clefts in rocks, and cover with a frame in winter, or plant in pots wedged in with stones. Peat and leaf-mould. *Four to ten inches*.

Aspidium aculeatum, var. *Braunii*.—This rare and beautiful sub-evergreen Fern is one of the choicest of our natives for cultivation. Fronds deep, rich green and chaffy; very distinct, easily grown. Fifteen to nineteen inches. The type of this species and the closely related *Aspidium angulare*, natives of Europe, are both very handsome and desirable Ferns to cultivate. They do well with a frame protection in winter, and may be perfectly hardy, as is our variety.

Cystopteris fragilis.—A very charming little Fern of easy culture. Will thrive under very various conditions of moisture or sunshine. Nine to twelve and a half inches.

Cystopteris bulbifera.—This, when well grown, is one of the most beautiful and interesting of our native Ferns. It wants a moist, cool spot, and then will develop fronds of surpassing grace and beauty. It increases very rapidly by bulblets,



Fig. 55.—*Pseudophoenix Sargentii* on Long's Key, Florida.—See page

Aspidium Lonchitis.—This handsome evergreen Fern is, unfortunately, difficult to grow. Peat and leaf-mould. A native of the far north and north-west. Frame. *Six to eighteen inches*.

Aspidium acrostichoides.—A very fine Fern in cultivation, its thick, glossy, rich evergreen foliage being fine by itself, or as a contrast with lighter green species. The variety *Incisum* is very handsome, deeply cleft individuals being almost suggestive of Holly leaves. The fronds of this species are used by the trade extensively in winter in making up bouquets, and it might, therefore, pay to grow it commercially. Eighteen to twenty-two inches.

Aspidium munitum.—A handsome evergreen species from the north-west, well worth cultivating. Not hardy; but at the Botanic Garden in Cambridge it does well with a frame in winter. Fifteen to eighteen inches.

which fall to the ground and root freely. The bed should be thinned out and the plants reset occasionally to get the best results. It is very fine grown at a little elevation, as on a moist bank or portion of the rock-work; the graceful fronds can then show off to greatest advantage. Twenty-four to thirty inches.

Onoclea sensibilis.—This Fern is very desirable on account of its distinctness and possibilities under cultivation. It might be overlooked by a cultivator on account of its commonness; but it would be a great mistake to omit it from the Fern-garden. The broad, light green frond is an object of great beauty, intermingled with darker species, and with good culture attains fine proportions. Two and a half to three and a half feet.

Onoclea Struthiopteris.—This splendid Fern is capable of producing very grand, almost sub-tropical effects, when well

grown, and in quantity, or as a single specimen plant, forms a striking object in the Fern-garden. In spring the pinnæ of the young fronds overlap one another in a graceful fashion, suggestive of the form seen in well curled ostrich plumes. Gradually the fronds push up until they attain a height of four feet or more in fine specimens, and spreading out in a vase-like form from the abbreviated, tree-like base, make truly splendid Fern effects. The brown fertile fronds come up in midsummer and give a pleasing contrast to the green, sterile fronds. It increases rapidly by sucker-like, running root-stocks. These should be dug up occasionally and planted elsewhere, or otherwise disposed of, as they will interfere with the main plants if allowed to remain. Four to four and one-half feet.

Woodsia glabella and *W. hyperborea* are delicate little Ferns, growing naturally in shaded clefts of rocks trickling with moisture. They would be both difficult to cultivate, and had, perhaps, best be attempted in a Wardian case in a very cool green-house. Only *W. hyperborea* has been grown by me or seen under cultivation. *W. glabella*. One to four inches; *W. hyperborea*. Two to six inches.

Woodsia ilvensis.—Grows in dense clumps of extremely pretty chaffy fronds. When young the fronds are almost silvery from a thick coating of chaff. Plant in well-drained, sunny spots, with rocks. Very attractive in cultivation. Two to five inches.

Woodsia obtusa.—A very pretty Fern, not difficult to grow. Peat and leaf-mould. A plant at the Botanical Garden in Cambridge measures ten inches.

Dicksonia pilosiuscula.—A handsome, desirable species. Fronds quite tall, light green, sweet scented. A fine Fern for covering bare spots with a dense, carpet-like growth. Grows freely in any situation. Two and one-half to three feet.

Lygodium palmatum.—This, the Hartford trailing Fern, is one of the most striking and attractive of all our native species. Rather difficult to get established, but, judging from a fine clump in Dr. Henry P. Walcott's garden in Cambridge, it does well after it is established.* Two feet, growing taller as the season advances.

Osmunda regalis.—A fine Fern, very distinct from the two following species. In spring the fronds come up, of an exquisite reddish brown, passing into green, and the brown stems are covered with a bloom. The color and form and grace of the young fronds have an indescribable charm. Later the fronds push up till they reach a size entitling this Fern to highest rank amongst the showy native species. The popular name of Royal Fern was given to this species in England, where it attains a much greater size than in this country. Moore, in "The Ferns of Great Britain and Ireland," says it attains the height of six to eight or even ten to twelve feet in damp, sheltered situations. A splendid specimen, seen growing in an artificial bog at Kew Gardens, towered above the head of a tall man. In cultivating this fine Fern, as well as the two other species of the genus, secure the largest roots possible and plant in the dampest spot in the garden; a natural or artificial bog will be found best adapted for their needs. The specimens measured are grown in ordinary garden soil; but even then good results may be obtained. Three to three and one-half feet.

Osmunda Claytoniana.—The sterile fronds of this species are quite similar to those of *O. cinnamomea*, but the fertile are combined in a single frond, with a sterile portion unlike that species. It is a very handsome Fern, particularly when in fruit. Culture the same as for *O. regalis*. Forty to forty-six inches.

Osmunda cinnamomea.—One of the finest and most distinct of our native Ferns. The delightful woolly fronds come up in spring strong and vigorous, with a beauty peculiarly their own. In early summer the fertile or flowering fronds, as they are called, form a fine cluster of cinnamon-brown spikes in the centre of the vase, forming tall, green fronds, producing a very fine effect. In autumn the fronds commonly change to a rich reddish or golden yellow. Culture as for *O. regalis*.† Three to three and one-half feet. These measurements could doubtless be much exceeded under favorable circumstances.

The Botrychiums are a difficult group to handle, and I have never seen them successfully established under cultivation.

*The species is considered as indigenous only to the United States; but, curiously, Dr. Walcott's plant was sent to him from Europe, and was said to have come from Japan.

†*O. cinnamomea* is the only Fern, as far as observed, that seems to be truly affected by cultivation. The lower divisions of the pinnæ in several plants in the writer's collection are produced and are themselves pinnatifid. Eaton notes this as occurring sometimes in luxuriant wild specimens. The character varies in degree or may be wanting in different seasons on the same plant. A plant of the variety frondosa also varies in different seasons and individual fronds in showing its varietal characteristic.

tion. For a year they will grow well, and sometimes two or three years they survive; but they eventually become smaller and smaller and soon disappear. Many plants known to the horticulturist will not bear transplanting, and this may be such a case, so that if grown from spores where they were to remain, Botrychiums might be successfully cultivated. *Botrychium Virginianum* is the strongest and tallest of our species, and Mr. Robinson says it is the easiest to cultivate; it would, therefore, probably be the best species to attempt to grow by means of spores. Leaf-mould and peat. Eight to twenty-four inches. Mrs. P. D. Richards, of West Medford, has grown *Botrychium ternatum*, var. *dissectum*, in pots successfully for a limited period. There are four other species of Botrychiums indigenous to New England, but they are omitted, as no cultural remarks can be made concerning them.

Ophioglossum vulgatum.—This Fern, like the Botrychiums, may be considered difficult to cultivate. It may be grown for a short time in pots in peat and leaf-mould, and perhaps, with similar treatment, in the open ground. Two to twelve inches.

In the following lists the Ferns not indigenous to New England are designated by an asterisk, and an interrogation mark signifies that a Fern questionably belongs to a list, and that it may more properly be considered under one of the other lists.

Perfectly hardy Ferns, easily grown and desirable for general cultivation:

<i>Polypodium vulgare.</i>	<i>Aspidium spinulosum</i> and varieties.
<i>Pteris aquilina.</i>	" <i>Bootii.</i>
<i>Adiantum pedatum.</i>	" <i>acrostichoides.</i>
<i>Asplenium ebeneum?</i>	" " var.
" <i>angustifolium.</i>	" <i>incisum.</i>
" <i>Thelypteroides.</i>	" <i>aculeatum,</i> var.
" <i>Filix-femina</i> and varieties.	" <i>Braunii.</i>
<i>Phegopteris polypodioides.</i>	<i>Cystopteris fragilis.</i>
" <i>hexagonoptera?</i>	" <i>bulbifera.</i>
" <i>Dryopteris.</i>	<i>Onoclea sensibilis.</i>
<i>Aspidium Noveboracense.</i>	" <i>Struthiopteris.</i>
" <i>Thelypteris.</i>	<i>Woodsia ilvensis.</i>
" <i>cristatum.</i>	" <i>obtusa.</i>
" " var. <i>Clin-</i>	<i>Dicksonia pilosiuscula.</i>
" <i>tonianum.</i>	<i>Lygodium palmatum?</i>
" <i>Goldianum.</i>	<i>Osmunda regalis.</i>
" <i>Filix-mas.</i>	" <i>Claytoniana.</i>
" <i>marginale.</i>	" <i>cinnamomea.</i>

Ferns requiring the protection of a frame in winter, but easily grown with that care:

* <i>Polypodium Californicum.</i>	<i>Camptosorus rhizophyllus.</i>
* <i>Lomaria Spicant.</i>	<i>Phegopteris hexagonoptera.</i>
<i>Asplenium Trichomanes.</i>	* " <i>calcareo.</i>
" <i>ebeneum.</i>	* <i>Aspidium Nevadense.</i>
* <i>Scolopendrium vulgare.</i>	* " <i>munitum.</i>

Ferns more or less difficult to cultivate, and best grown in pots, or with the protection of a frame in winter:

<i>Pellaea gracilis.</i>	<i>Camptosorus rhizophyllus.</i>
" <i>atropurpurea.</i>	<i>Aspidium fragrans.</i>
<i>Cryptogramme acrostichoides.</i>	* " <i>Louchitis.</i>
<i>Woodwardia angustifolia.</i>	<i>Woodsia glabella.</i>
" <i>Virginica.</i>	" <i>hyperborea.</i>
<i>Asplenium viride.</i>	<i>Botrychium.</i>
" <i>Ruta-muraria.</i>	<i>Ophioglossum vulgatum.</i>

Boston.

Robert T. Jackson.

Dutch Bulbs.

HYACINTHS, Tulips, Crocus, Narcissus and the like now claim attention. Complaints are often made that these bulbs do not succeed; they either winter-kill or fail to produce such flowers as the catalogues promise, or such even as are seen when the bulbs are grown in pots, and every year comes the repeated question, "Why did we fail?" For the failure there may be many causes, and the first is the neglect to plant the bulbs at the proper season. While these bulbs all require perfect rest, when they may be kept as dry as seeds, it does not follow that they can remain out of ground beyond a given time without injury. For the best success all Dutch bulbs should be planted by the first of October, and, if worth planting at all, it should not be deferred until November, because by that time they commence growth, and when this goes on in their dry state their vitality is impaired.

The next cause of failure, and the most important of all, is

the general impression that these bulbs are hardy. Hyacinths, Narcissus and many other Dutch bulbs are not hardy, and are not so considered by those who cultivate them for sale. In Holland the beds are mulched with the reed, so common on the borders of their canals, so that it is impossible for the frost to penetrate the earth at all. This precaution is needed in this country more than in Holland, because of the constant and severe changes of temperature. Our experience has taught us the necessity of mulching so thoroughly that frost cannot even enter the ground, much less reach the bulbs. With this precaution we can grow the Hyacinth as successfully as the celebrated Dutch growers, although we have more, in the way of climatic changes, to contend with, than they.

A great difficulty is the marked change in temperature so common in April or May, when the flowers appear. Some suitable covering for the bed should be at hand, ready for use when required, and thrown over the plants when there is danger of a severe frost.

The best mulching we have ever tried, and the most natural one, is newly fallen leaves, always abundant in the garden; cover the bed to the depth of a foot, and keep the leaves from getting scattered about by a layer of evergreen boughs; if these are not convenient, use brush of any kind or old boards; whatever is the easiest to obtain is the best to use.

The Polyanthus Narcissus is still less hardy, in fact it will not endure freezing, and therefore must be carefully protected.

Tulips are hardy, but they will produce far finer blooms if moderately protected, and the same may be said of Crocus.

without division, giving annually fine spikes of bloom. The cost of second-sized bulbs is considerably less than larger ones, and that, too, is a point in their favor.

As a spring flower for garden decoration nothing can surpass the Tulip. The finest varieties of these bulbs can now be obtained at prices that will permit their general cultivation, and with a little care they will rapidly increase. The Tulip delights in the same soil as the Hyacinth, and it should be prepared in the same manner. The bulbs should be placed four or five inches below the surface, according to size, and it is important that each variety should be put in at a uniform depth to insure simultaneous display. Tulips will do well planted any time before the ground freezes up. They do better by far if planted much earlier—in fact, as early as they can be obtained.

The hardy varieties of Narcissus, now very popular, should be planted in quantity, especially in those spots where it appears naturally at home, such as under the shade of trees and in shrubby borders. There is now an awakened interest in the many forms of double and single Narcissus (Daffodils), and they are certainly most effective garden flowers. All the varieties should be grown in clumps and patches in every spot which is suitable and vacant. In any out-of-the-way place large quantities of *N. poeticus* should be planted for a supply of cut flowers. Their graceful appearance renders them peculiarly valuable for this purpose, and if cut when partially opened, they will develop in water and last for many days. In planting be guided by the size of the bulb, allowing four or five inches between small sorts, and five or six inches between the larger varieties. Bulbs of Narcissus may remain undisturbed for many years, and annually improve in the quantity and quality of the bloom. Soil is a secondary matter with the Narcissus; a moderately heavy one is to be preferred, but they will grow almost anywhere.

The Crocus must be planted early to succeed. If kept out of the ground until November it will never regain its lost vitality. Plant in September if possible, and in no case after October. These bulbs will grow in any soil, and do fairly well for many years undisturbed. Make the soil very rich, cover the bulbs two inches, and protect the same as Hyacinths.

Snowdrops are about the earliest spring flowers, and particularly desirable because of their willingness to bloom under all circumstances. It seriously injures these bulbs to remain long out of ground; therefore plant early, about two inches deep, and, if possible, where they may remain undisturbed for many years. In moist, shaded places they will form dense masses, completely driving out all other herbaceous vegetation.

Crown Imperials can only be grown to advantage in gardens, and stately plants they are. They demand a rich, light soil and an open position. Carefully protect against frost, for although frost hardly injures the growing plant, the bulbs are always injured by freezing.

C. L. Allen.

Queens, N. Y.

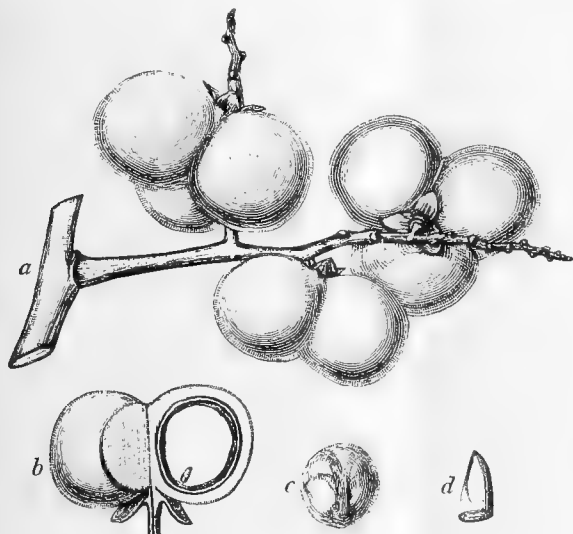


Fig. 56.—Fruit of *Pseudophœnix Sargentii*.—See page 352.

a—Portion of a panicle (natural size).
 b—Section of a Fruit.
 c—Seed, showing raphis.
 d—Embryo.

The most suitable soil for Hyacinths is a light, rich, sandy loam or clear sand; but they will do well in any good garden soil. To grow them to perfection, however, special treatment is necessary, and no plants require more care to keep them from degenerating than the Hyacinth. They are strong feeders, and the soil cannot very well be too rich, if they are to produce strong spikes of flowers. No fresh or rank manure, however, should be used on any account. Thoroughly rotted manure from the cow-stable is the best, and it should be placed a foot below the surface of the bed.

In making beds for Hyacinths the ground should be dug to the depth of at least fifteen inches, and proper provision should be made for effectual drainage. Six inches of manure should be placed at the bottom and covered with four inches of soil; upon this place the bulbs, say five inches apart each way. If the soil is heavy and tenacious, cover the bulbs with a little coarse sand, then cover the whole with soil so that the crowns will be at least five inches below the surface. Hyacinths can be grown fairly well without this care, but perfection of bloom, for which every cultivator should strive, requires all the care here recommended.

The selection of the bulbs is, to a considerable extent, one of individual taste as regards colors and variety of form, but a few rules can be laid down for general use. Choose the heaviest and most solid. Size is not of so much importance, except for forcing in pots or glasses, when the largest and best should be chosen. For the open border, medium or small bulbs are preferable, as they will remain longer in the ground

The Vegetable Garden.

OLD plants of Globe Artichoke now show many dead leaves and flower stems, which should be cut and removed. Have the frames, sashes or other protectors ready to place over the Snap Beans, Cucumbers and Tomatoes, to save them from frost. If Brussels Sprouts show no tendency to sprout pinch the points out of a row of them; this will induce them to form side sprouts early, but these early sprouts are not likely to be solid; only those that appear naturally can be depended on. If Cabbages or Cauliflowers are hearting too soon, pry up the plants a little with a digging fork, then pack the ground solid about them again; this checks their growth. Keep young Carrots, Beets and Turnips thoroughly clean, and hoe them every week. Sow a little Chervil for use in spring, and, if desired for winter, sow some in a frame. Sow some Corn Salad in a frame in rows six inches apart. As this is a small growing vegetable it should be sown thickly. German Greens can be sowed in rows, fifteen inches apart, in rich but well-drained ground out-of-doors, for use in spring. This crop should be lightly mulched with sedge, sea thatch or dry leaves in winter. Erfurt Cauliflower and Wakefield Cabbages were formerly sowed about the 20th of September to be wintered in cold-frames and planted out for early spring crop, but we are more successful with plants raised in the greenhouse or hot-bed in February or the 1st of March. But in the Southern States fall sowing is still much practiced. Early Celery should be earthed up as required, but banking the late winter crops should be delayed. Never handle Celery while it is wet with dew or rain. Put in a large sowing of Lettuces for winter use. Sow them out-of-doors and early in October prick them closely into a cold-frame. Salamander is the best

for use before Christmas; after that, Boston Market; but both must be sown now. Lettuces planted out in the open garden after this time of year will not be likely to mature before frost destroys them, but, if planted now, the half-grown Lettuces can be lifted into the frames in October. It is from the frames thus filled that our supply of young plants is drawn for hot-beds between November and February.

Winter Spinach should be sown now. If it is to be left uncovered over winter, sow the Prickly-seeded; if it is to be protected by frames or mulching, the Round-seeded will be just as good and rather more prolific. The soil should be rich, and have a warm, sunny aspect, sheltered from cold winds, and so well drained that water cannot lie upon it in winter. If in the open garden the rows may be fifteen inches apart. The ground set apart for Winter Spinach has been occupied during the summer by green-house, winter-flowering plants, which we are now lifting and potting. Last year we used ground that had been cropped with early Melons. Field mice are so numerous and destructive here, that it is useless to try Spinach in the open ground and mulch it in winter; we cover our crop with cold-frames. The land is marked off in strips eight and one-half feet wide; this gives strips six feet wide for the frames, with two and one-half feet for passages between them. Seven rows, ten inches apart, running lengthwise, are then marked off to each string of frames, and this leaves a few inches between the outer rows and the sides of the frames. The frames may be laid down now or in November, but must not be covered with sashes till sharp frost occurs. Spinach sown now will yield a good picking in about five or six weeks after sowing, but, except to thin it where it is too thick, it should not be picked clean. During the winter months there is no need to exclude frost altogether; sashes, straw mats and extra sashes or shutters over the mats in the case of very severe weather, will answer, if in early December the frames are banked with earth, leaves or manure.

Onion sets are often planted in fall so as to save time in spring. This should be done early, so as to get them well started before winter sets in. Use light, warm, dry soil, and plant in rows marked off four inches deep and a foot apart. Yellow Danvers, Red Wethersfield and Southport White Globe are good Onions for this crop. To insure a good crop, these Onions should be mulched in winter to prevent "scalding" and frost heading, so, taking all things into consideration, it is better not to plant out any in the fall, but wait till early spring. Many gardeners sow a bed of Danvers Onions early in September and mulch it in winter, to supply green Onions early in spring.

Glen Cove, L. I.

Wm. Falconer.

Fay's Prolific Currant.—The commendation of this Currant by Mr. Williams, in the issue of GARDEN AND FOREST for August 8th, is none too emphatic. In my experience with the newer small fruits, I find it is the one which meets all the claims made for it by its originator and propagator. And, by the way, is Mr. Josselyn, its propagator, a descendant of the Josselyn who, in 1672, published "New England Varieties of Red and Black Currants"?

About six years ago I purchased a single plant of Fay's Currant for one dollar, and, in my ground, it has justified all the promises made, and wherever I have seen it growing in New Jersey it has been far ahead of the Cherry or Versailles in production, while in size and quality it is their equal, to say the least.

I have a dozen bushes propagated from the original one, and this year have picked eighty-four quarts, or an average of seven quarts to each plant, the bunches of fruit being from four to five inches long, while many measured fully six inches. The space between the base of the stem and the first berry greatly facilitates the work of picking and saves the fruit from being crushed. The Cherry and Versailles set their fruit close up to the old wood, and in a compact mass, which makes picking difficult.

In size I find Fay's as large as the Cherry or Versailles in their best condition, more full of juice and of superior quality.

I never found a Currant so satisfactory for jelly and table use, and, if picked at the right time, it makes more jelly and in less time than any other variety. In fact, I have discarded all others. It may be doubted whether any expert, with his eyes shut, could distinguish the flavor of Fay's and the Cherry at their best, while in appearance Fay's far excels all others.

With berries half an inch in diameter, and bunches from four to five inches long, and the bushes literally loaded, it would seem that perfection in Currants had been reached. But it possesses one more good quality, namely, that all

sound wood grown this year will bear a full crop next year. There are no dormant buds, and, in this respect, it differs from other varieties.

Chas. L. Jones.

Newark, N. J.

China Asters.—Comet maintains its reputation as being one of the most beautiful, large, rose-purple, spreading-petaled varieties. But while each plant produces about a dozen flowers, only a few of them are of full size and perfect. Dwarf White Queen is the best white Aster here. It is small, but not bunched in habit; very free flowering, and the flowers are large, full-double, pure white, and the most of them are large sized. It is earlier than most other varieties, and the plants in the row are of perfectly even size. It seems to be a selection from the Chrysanthemum-flowered section. The New Dwarf Crimson Queen is, except in the color of its flowers, which are purplish-crimson, an exact counterpart of White Queen. Diadem is a new type of Aster, and a novelty of this year. It is a compact-growing, upright, much-branched variety, with small, crimson-purple flowers edged with a band of white. Our plants are now in bloom, and the poorest of any Asters of any type we have. The flowers are very imperfect, and the white band indistinct. After the type has been properly fixed and the band well defined, no doubt this will become a desirable flower. Triumph is one of this year's novelties. It is a dwarf, compact, free-blooming variety, but later in blooming than other China Asters. It is described as "eight or nine inches high." "The flower-heads are from two and a half to three inches across, very perfect in form, with incurved petals of a pure scarlet when first expanded, changing to satiny deep scarlet." Our plants of it are now in bloom, and are about nine inches high, compact, with ten or fifteen medium-sized flowers on each, and these flowers are of a bright purplish-crimson color, and not scarlet at all in any stage of their growth. Did any one ever see a scarlet-flowered China-Aster of any sort?

G. C.

Asclepias atrosanguinea aurea is one of this year's novelties. It is described as a Bolivian species resembling *A. Curassavica* "in habit, but is much more effective; its numerous flowers, borne in large, dense umbels of a deep blood-red, with a golden-yellow corona or centre." This plant and *A. Curassavica* are growing along-side of each other, and are now in bloom. They are both from seed sown in the green-house last spring, and the seedlings planted out in the open garden, where they now are blooming. The flowers of the *A. atrosanguinea aurea* are of a deeper and brighter color (exactly as described above) than those of *A. Curassavica*, but, except in this slight variation in color of blossoms, the two species, so-called, seem to be identical.

F.

Notes from the Arnold Arboretum.

Vitex incisa, which is now in flower, is a small, bushy tree or tall shrub, with erect branches, which are covered with compound, digitate leaves, composed of five to seven lanceolate, deeply pinnatifid leaflets, and terminated with spike-like clusters of handsome blue flowers. The stems are sometimes killed back in severe winters here, but as the flowers are borne on the new growth this does not interfere with the blooming of this really desirable plant. It is a native of northern China, where it seems to be common on mountain-sides. The well known Chaste-tree (*Vitex Agnus-Castus*), a native of the country surrounding the Mediterranean, is not hardy in the Northern States. The other Asiatic species, of which there are two in Japan and a third in northern China, are not in cultivation probably.

Panax sessiliflorum is a native of the Amoor country. It is here a stout and very hardy shrub, with erect, unarmed stems, three or four feet high, and covered with pale brown bark, upon which are many small, darker, wart-like growths. The ample, yellow-green, ternate leaves are borne on long, stout petioles, and quite cover the stems from the ground upward. The flowers are small, with dark purple corolla and stamens, and are aggregated in spherical heads, which are borne on stout stems in short, erect racemes from the axils of the upper leaves. This plant has been in bloom now for more than a month, and it will continue to produce its handsome heads of flowers until the appearance of frost. This peculiarity, the neat, compact habit and great hardiness, make this a desirable garden plant. Its real claim, however, upon the attention of planters, lies in the fact that the flowers are followed by heads of shining black berries, which remain upon the branches bright and fresh until the appearance of the new leaves in spring. The number of shrubs which carry their

fruit fresh through the severe winters of the Northern States is so small, that any addition to the number is welcome.

Clematis Flammula, a native of southern Europe, is a well known garden plant, having been cultivated for three centuries at least. It is a vigorous grower, and its pure white, fragrant flowers are not, perhaps, surpassed in beauty by those of any of the small-flowered, summer-blooming Clematises. A variety of this, a more vigorous and freer-blooming plant, is known in nurseries as *C. Flammula robusta*. It should find a place in every garden in which there is room for a rampant climber capable of covering in the course of a few years a space twenty feet or more square. The stems grow late in the season, and so are often killed back in severe winters; but this pruning only increases the vigor of the plant, and stimulates it to a stronger growth, and more profuse, although a later, blooming. Here the flowers are just opening, and will continue to appear until destroyed by cold weather. Mr. Dawson finds this plant slow and difficult to propagate either by layers or cuttings.

Clematis Pieroti is flowering in the Arboretum for the first time. It is a pretty, delicate Japanese species, with small white flowers and pinnate leaves, the pinnæ sharply and deeply serrate, with prominent veins, covered with short, oppressed hairs, which appear more sparingly on the upper surface. This is an interesting and rather valuable addition to the list of summer flowering, climbing plants, although in habit and in flower it is not unlike our native *C. Virginiana*. It blooms, however, several weeks later. *C. Pieroti* is apparently perfectly hardy.

Cissus Japonica is one of some twenty-five Asiatic, African and Australian species which constitute Planchon's section *Cayratia*, distinguished by the inflated corolla, with spreading petals, devaricately branched cyme, and by the annual stems proceeding from large, tuberous roots, which, in the case of *C. Japonica*, are able to support the climate of our Northern States. The stems are four or five feet high, sharply angled, climbing by means of stout tendrils. The leaves are three to five foliate, long petioled, dark green and lustrous. The sub-axillary cymes of flowers are long peduncled, widely, dichotomously branched. The flowers are short pedicelled, the base of the corolla distinctly swollen, with ovate, triangular, pale rose-colored petals. The fruit, which is hardly as large as a pea, is crimson. This is a widely distributed plant from Japan through many of the East Indian Islands and New Caledonia to tropical Australia. It has little value as an ornamental garden-plant, but much interest as representing a curious form of the Grape Vine.

September 3d.

7.

The Forest.

A New Forest Law in Russia.

WHILE our own Government refuses to take any judicious action looking towards the preservation of our forests, or, to state the case more correctly, while public opinion here is not sufficiently educated on the subject to command its expression in intelligent laws, or to enforce such laws even if they were enacted, the other nations of the world are making efforts to save themselves from the disasters which follow unchecked and unregulated tree cutting. The latest Government to adopt measures for saving its forests is Russia, where, for generations, timber has been recklessly felled and forests plundered. It has long been admitted that stripping the forest cover from the sources of her streams has brought serious changes in the physical and climatic conditions of the empire, one of which is seen in shallower harbors and water-courses. To restrain these evils and restore better conditions so far as may be, a law has been enacted, which is warmly commended by the best organs of public opinion, so that the work of the Commission created by the law is more likely to be carried on with spirit and energy and not in a superficial or perfunctory way. Some of the features of the law are outlined in the following letter from the St. Petersburg correspondent of the London *Times* :

"The new law just promulgated extends to all forests, Government, communal and private, which are to be planned out by a special commission appointed by the Ministry of Imperial Domains, and are to be designated protected woods. The timber thus to be protected may be roughly divided under the following heads: (a) Growing in shifting sand and

obstructing its encroachment on seacoasts, navigable rivers, channels and artificial water courses; (b) sheltering towns, settlements, villages, railways, high roads, post roads, cultivated land, and equally such the removal of which might aid the formation of shifting sands; (c) protecting the shores of navigable rivers, channels and watercourses from landslips, overflows and damage from floating ice; and, lastly, timber and underwood growing on hillsides, cliffs and slopes, if such be found to avert landslips, detachment of rocks, the formation of snow avalanches and rapid torrents. The measures for carrying the foregoing into effect are intrusted to a commission, which elaborates plans not only for the preservation of standing timber, but likewise for the planting of saplings and the proper and regular thinning of forests. With regard to private woods, the measures issued by the commission are to be applied with the consent and co-operation of the proprietors, if possible. If, however, the latter are opposed to such measure, the property is purchased by the State at a certain valuation and the necessary plans carried out. The owners have the right, within a certain period, of repurchasing the property for the same price, but with the addition of the cost of introducing the measures and six per cent. per annum on the capital. In other cases the necessary steps can be taken without purchasing the property at the expense of the proprietor. To enforce the observance of the rules laid down by the commission, new penalties have been promulgated against transgressors, particularly as regards plunder of timber, which is carried on throughout the country to an incredible extent."

Planting the Dunes.

FROM Calais to Hamburg is a long stretch, but for nearly the whole distance the coast line consists of loose sand, now forming flat "links," with a sparse but botanically very interesting vegetation, now blown up into picturesque, irregular hillocks, held together, more or less, by creeping grasses and other plants. In some parts of Kent, in Suffolk and Lincolnshire, the same conditions prevail, but on a smaller scale. However pictorial, or however interesting to the naturalist, such land is, agriculturally, mostly a sterile waste, and it is therefore with no surprise that we learn that the King of the Belgians has interested himself in the matter, and has appointed a commission to study the best means of planting the dunes. We are the less surprised at His Majesty's interest in the matter, as some years ago we were eye-witnesses to the process of digging out His Majesty's villa at Ostend from the sand which had accumulated during the winter above the level of the ground floor windows. The plans for planting the sand hills between Ostend and Blankenberghe have been executed by M. Van der Swaelmen, of Brussels. They are so contrived as to insure protection from the prevailing winds, and when carried out will ultimately form picturesque woods with winding paths, good roads, and other conveniences, which will insure not only an increased agricultural value to the land, but, what is nowadays the most paying of all crops, a crop of villas facing the sea. Those who remember the delightful wood which extends from the Hague to Scheveningen will rejoice that there is now so good a chance of the formation of a similar wood between Ostend and Blankenberghe, a distance of 6 to 7 miles. So far as we are able to judge, M. Van der Swaelmen's plans are admirably adapted to the desired end.—*Gardener's Chronicle*.

Correspondence.

Suggestions for Making a Tennis Lawn.

To the Editor of GARDEN AND FOREST :

Sir.—May I ask you for some instructions about laying down a tennis ground? Being a novice, I should like explicit directions as to leveling, seeding and other details.

Petersville, Michigan.

S. L.

[Minute and explicit directions for making a tennis lawn cannot well be given that will apply to every case. The question of expense, to begin with, is often the most important element of the problem; but even if this be a minor consideration, there will, usually, be other limitations to meet which good judgment and experience will be required. The climate is the main difficulty that has to be contended with in this country, and the mistake most commonly made is insufficient and superficial preparation of the soil before seeding or sodding. This error not only

greatly increases the expense of maintenance, but prevents the attainment of the best results even with the best of care-taking. With a soil of proper texture and sufficiently fertile, it is only required to follow the directions which have been given in former numbers of this journal for making a good lawn, taking special care to have it firm and level. It often happens, however, that a tennis court is wanted where the soil conditions are unfavorable, and then the proper preparation of the soil may be a difficult and expensive task. This preparation of the soil involves two distinct qualities—its mechanical condition and its chemical composition. The soil should be porous enough to absorb sufficient rain water, and to afford ready passage for roots, and yet compact enough to prevent the water absorbed from quickly draining away and evaporating too rapidly; and it should, also, be so firm as not to be stirred up by the grinding action of feet upon it, which would otherwise break the roots and crowns of the grass. In short, the soil should be porous, and yet have a "binding" quality. Sand is porous, but will not bind. Clay will bind, but is not sufficiently porous. A proper mixture of the two will produce the mechanical quality desired.

It is safe to assume that most soils need enriching. For this purpose there is nothing better than rotted barn-yard manure. But it is often more economical to add a mixture of properly prepared peat, muck or leaf mould and commercial lawn fertilizer, than to use barn-yard manure exclusively. The question as to how much manure should be added to a soil is so much one of expense and judgment, that no definite rule can well be given. An ordinary farm field, in fair condition, may have manure, at the rate of twenty cart loads to the acre, plowed in when it is laid down to grass, and a top-dressing of a like amount every three years or so. Ornamental grounds of large extent, in which a better result is desired, and yet in which a careful economy must be observed, may have at least twice that amount plowed in at the start, and an annual top-dressing of half as much to the acre may be applied. A tennis lawn or any other ground upon which turf is to be maintained, that is subject to much wear, may, however, well have more.

The soil of a tennis lawn should be deep, that the roots of the grass may easily descend to permanent ground moisture, just how deep, up to three or four feet, being a question of expense. The topsoil, or mould, and subsoil of good quality, taken together, should extend to that depth if practicable, in order to retain sufficient moisture to last over droughts. It is more economical in the long run so to prepare the soil in the beginning as to store up natural moisture, than it is to supply it artificially upon the surface when needed.

In some instances, however, there will be, at times, too much natural moisture in the soil, and under-drainage is the remedy for such cases. In the case of stiff, clayey soil, another and very important advantage in under-drainage is to make it more porous and pervious to roots. Drainage is best effected by laying land tiles at least two inches in diameter, at a depth of three or four feet and thirty or forty feet apart, care being taken to give them a sufficient pitch and a proper outlet.

For deep preparation of the soil, trenching should be resorted to. This process consists in throwing back the topsoil on a strip from three to ten feet wide, so as to expose the subsoil, which is then dug up and turned over, or thrown back if it is desired to work more deeply. The lumps are pulverized, clay or muck mixed in, if the original soil is too sandy, or sand and peat, if too clayey, and stones, stumps and roots of large size thrown aside, and all necessary grading and leveling done. Then the topsoil of the next strip is thrown upon the strip of subsoil thus prepared, great care being taken to sift out all the roots of weeds and coarse grasses. And so on.

It not infrequently happens in New England and other parts of the country that have been subjected to glacial action and deposit, that both the topsoil and subsoil con-

sist of dry, coarse sand and gravel, upon which it is almost impossible to maintain good turf, after the ordinary preparation, without an extraordinary amount of manure and almost constant watering during dry weather. In such a case, it is an economy to throw back the soil strip by strip, as for trenching, and to place at a depth of three or four feet below the surface a layer of clay about six inches thick, which may be put in dry, if broken to a fine powder, or, which is usually easier, it may be wet and "puddled"—that is, worked into a comparatively homogeneous mass of mud. In either case it forms an impervious bottom to the lawn, thus preventing the rain which falls or the water which is applied from settling down too deep for the roots of the grass to reach it. The sides should, of course, be left sufficiently porous to allow excessive moisture to drain off.

Another case would be where the soil was almost pure clay, and where no muck or sand or finely divided mineral matter could be obtained without excessive cost. In such a case, the ground having been thoroughly under-drained, the usual way is to mix in almost any sort of vegetable fibre, such as leaves, half decayed twigs, leaf mould from the woods, sods, weeds, the tops and refuse of vegetables, and the like.

After the subsoil has been thoroughly prepared, the topsoil is manured and deeply harrowed several times. The ground should then be leveled, rolled and allowed to settle. If the previous work has been well done, the settlement will be uniform; if it is done late in autumn the ground will become none too firm during the winter, and it should not be deeply plowed, but harrowed and leveled as early in spring as it can be worked. If good sod can be procured, the court will be ready for use as soon as the grass is green. The sods, of equal thickness, should be rolled down very firmly, to bring the grass-roots in close contact with the soil. It is a good plan to sow the seed of Kentucky Blue Grass and the finer varieties of Redtop upon the sod as it is laid, and to repeat this sowing every spring. A dressing of some "complete" fertilizer—that is, one that contains nitrogen, potash and phosphoric acid—can also be applied every spring; or fine manure can be spread over the lawn in autumn, to be raked off in spring. In case no sod can be procured, the seeds of the grasses above named can be sown after the ground is leveled and rolled, then lightly raked in and rolled again. If the seeding is done in early spring, the court can be used the same summer; but no seeded lawn is at its best the first season after sowing. Seed can be sown in early September, if the preparation of the soil has been made several weeks before, so as to allow time for settling.

No pains or expense should be spared to obtain the purest and freshest seed, which can best be done by applying to reputable dealers, who have sufficient call for it to warrant them in keeping it. Much disappointment has come from using inferior seed.—ED.]

To the Editor of GARDEN AND FOREST :

Sir.—I was pleased with your description of the *Shepherdia argentea*, and its bright, eatable berries. We grew it abundantly forty years ago, but found that it had a bad habit of letting its branches get ahead of its roots, causing the trees to fall over when ten or twelve feet high.

A notable object here now is *Citrus trifoliata* in fruit. It bids fair to make one of the best hedge plants. Let me add that *Berberis Thunbergii* makes a good hedge; but, in place of all hedges, give me a fence covered with *Lonicera Halleana*. It is a compact mass and as fresh now as in June. The inevitable gap spoils the hedge, but does not hurt a belt of thick shrubbery, which gives flowers at various seasons. The value of autumn flowers is worthy of consideration. A specimen of *Tamarix Chinensis*, as high as the house, is now waving here its graceful racemes of delicate colored flowers to the slightest breeze. It has been blooming since July and will continue blooming until frost. The large orange flowers of *Tecoma grandiflora* are now at their best and very showy. When grown as a pillar it is most striking, and, in time, will make a tree to support itself.

The new variety of *Magnolia parviflora* is now blooming for the second time this season. For it the word exquisite is no exaggeration. Fancy the pure whiteness and the outer petals of *Eucharis amazonica*, with a closely clustered centre of stamens of bright carmine. Add to this a strong perfume of *Magnolia glauca*, tempered with banana, and the result will justify the epithet. *Spiraea bullata* is now blooming here for the second time this season. The foreign papers are just pronouncing upon its *petite* beauty, and yet it has been in the market here for thirteen years, having been introduced by Thomas Hogg.

S. B. Parsons.

Flushing, N. Y., Sept. 1st.

Recent Publications.

A Manual of Orchidaceous Plants.—Part III. *Dendrobium*, *Bulbophyllum* and *Cirrhopetalum*. James Veitch & Sons, London, 1888.

The third part of this important work is devoted to an account of the different species of the genus *Dendrobium*, occupying 91 of the 102 pages, the remainder treating of the two small allied genera, *Bulbophyllum* and *Cirrhopetalum*. Like its predecessors, this part contains numerous illustrations both of individual flowers of many of the species and of fine specimen plants. Maps of south-eastern Asia, including the islands of the East Indian Archipelago and of Australia, show at a glance the geographical distribution of the principal species of *Dendrobium*, an essentially old world genus, of which *Epidendrum* may be taken as the new world representative. The genus, following Bentham in the *Genera Plantarum*, is divided into seven sections, only the fifth and seventh of which contain plants of horticultural value, most of the showy flowered species seen in gardens belonging to the seventh (*Eudendrobiums*). A hundred species, arranged alphabetically, with many varieties, are described, as well as fourteen artificial hybrid *Dendrobiums*; for many of these last Orchid-lovers are indebted to the Veitches' indefatigable enterprise and patient experiments, as we have had occasion to remark of another genus in an earlier notice of this publication.

The present part closes with cultural instruction, based upon long and unrivaled experience, and contains much interesting matter relating to the discovery and introduction into cultivation of many of the species described. Its value, however, as a working manual for the botanist or the horticulturist, would be greatly increased were the species numbered, if each part were not paged separately, and if reference numbers had been added to the illustrations. As now printed it will be practically impossible, almost, to quote this work in subsequent publications.

Quince Culture.—An illustrated hand-book for the propagation and cultivation of the Quince, with descriptions of its varieties, insect-enemies, diseases and their remedies by W. W. Meech. New York: Orange Judd & Co. 1888.

This little manual, as the author explains in his preface, is intended "to furnish all needed information for the profitable cultivation of Quinces in all places where they will grow." That the author has accomplished this task satisfactorily all will agree with us in thinking who read the plain and practical information upon the subjects which he undertakes to discuss. And the public will heartily endorse Mr. Meech's wish "that this fruit, for which there is no substitute, be no longer only a luxury within the means of the rich, but become so common and abundant that it may be enjoyed by all." It is certainly a remarkable fact that so little attention, comparatively, has been given to the cultivation of this useful fruit in the United States, and that when it has been grown, so little care has been paid to the proper management of the trees, that will repay generous treatment as to soil and careful pruning. And yet, Quince culture is so simple a matter that its essentials were all comprised in a brief article in this journal on the 18th of July last. That there are not now, however, more than a dozen varieties of the Quince worth cultivating (of these three or four of the best are of African origin) is not due to the fact that attention has not been devoted to the improvement of this fruit, but rather to its fixed character, which Mr. Meech seems to have overlooked. The Quince, of all the fruits cultivated by man during the past twenty or thirty centuries, is the least modified from its wild state; indeed, the flavor of the wild Quince of Persia varies but little from the best varieties of western gardens. Whether it is ever to lose its harsh flavor and become a dessert fruit is a question which future generations of Pomologists must decide. The improvement of the Quince offers a useful field for horticultural effort.

Periodical Literature.

THE city of Ghent has long been famous as one of the great horticultural centres of the world, and its people are now chiefly known for their love of flowers and their successful and profitable cultivation of them. The following historical facts relating to the early horticultural development of this Belgian city, which owes much of its present prosperity to horticulture, collected by the *Revue de l'Horticulture Belge*, and published at the time of the great quinquennial exhibition, lately held in that city, has, therefore, more than a local interest:

1366. On March 1st, 1366, the Burgomasters passed an order that the flower merchants' stands should be placed in the seed market. (The gardeners of Ghent were not an independent guild, but are supposed to have been connected with the fruiterers' corporation. At Bruges there was a guild of market gardeners.)
1464. Hector de Costere, a Captain from Ghent, on his return from a crusade against the Turks, brought the first Shallots from Escalon, and also the *Convallentulus tricolor*.
1518. Isabella, wife of Christian II., King of Denmark, and sister of Charles V., sent gardeners from Ghent to teach the Danes how to sow seeds and cultivate plants and flowers.
1537. After the conquest of Tunis, Charles V. had a collection of Cappadocian Tulips, and one of Roses, among which was the purple Rose of Tunis, planted in the garden of the *Cour du Prince* in Ghent.
1569. A young monk, P. de Rijcke, brought a collection of new and rare plants from South America.
1596. *Fritillaria imperialis* (The Crown Imperial) and *Lilium candidum* were introduced and cultivated for the first time in Ghent.
1598. William de Blasere, Burgomaster of the city of Ghent, and owner of the best known collection of Orange trees in the sixteenth century, introduced the cultivation of Cucumbers. He built the first hot-houses which are mentioned as having been glazed and heated in the country.
1600. When in 1600 the Archdukes made their grand entry into Ghent, the Abbé d'Ername presented to them, among other gifts, two magnificent *Chamærops humilis*. These trees were planted later in the botanical garden, where one was still alive at the beginning of the present century. The trunk of this tree enabled Morren to illustrate the peculiar structure of Palm-stems, and is still in the botanical laboratory of the University at Liège.
1675. The monk Reyntkens, from the Abbey of St. Peter at Ghent, a great lover of flowers, went to Lille to buy plants. They asked him over sixty-five francs, an enormous sum at that time, for a root of *Cyclamen Persicum*. In one of his works Reyntkens credits the moon with being the cause of the rise of sap in plants.
1742. The *Gazette de Gand* announced the first public sale of plants. Anemones, Ranunculus, Hyacinthis and Tulips were sold.
1749. A French nurseryman from Orleans came to Ghent with a great variety of fruit trees to sell.
1763. *Rhododendron ponticum*, imported from Gibraltar, was planted at Ghent for the first time.
1772. A gardener named Tontje Verstuyft exposed his flowers for sale on a Sunday in June in the *Place d'Armes*. He returned the next Sunday, and was followed by others. From this period dates the flower market, held in the *Place d'Armes* every Sunday during the summer season.
1773. Up to this time the auction sales of plants and flowers, which took place regularly, rarely attracted others than local horticulturists and amateurs, but when in 1774 a gardener, Judocus Huytens, went to England and returned with new plants, others, inspired by his example, did the same.
1797. On the presentation of a report by Charles van Hulthem and Dr. Bernard Coppens the government and municipality established a botanical garden on the spot occupied by the kitchen garden of the monks of St. Benedict in the Abbey of Bandeloo.

In *Chambers' Journal* for August, a chapter on "Eucalyptus Honey" says: "The existence of this particular honey was made known in 1884 by a French traveler, M. Guilmet, who, while exploring the island of Tasmania, noticed at the summit

of one of the Eucalypts a peculiar formation which appeared to be a gigantic gall." Discovering it to be a hive, he proceeded to cut down the tree—a specimen which measured seven metres in circumference—and upon tasting the honey discovered, to his surprise, that it "possessed the characteristic odor and flavor of the Eucalyptus essences." Samples sent to France excited the greatest interest. It was found upon analysis to contain about sixty-two per cent. of the purest sugar, and more than seventeen per cent. of the essential constituents of the Eucalyptus—eucalyptol, eucalyptene, cymol and terpene—all of which play an important part in the therapeutics of to-day. Attempts to produce a similar honey by chemical processes have proved vain, as the ingredients gradually separate and volatilize off. The honey itself, therefore, is believed to be destined to become an important medicinal article, for, given in small quantities, it has already proved very efficacious as a mild stimulant and a remedy for diseases of the throat and respiratory organs. Its antiseptic qualities make it valuable also in such diseases as typhoid, and it promises to replace, to a large degree, cod-liver oil. Unfortunately, the bees which produce the Eucalyptus honey are natives of Australasia only, and all attempts to acclimatize them in Algeria and France have been unavailing. In one Algerian district, where the tree has been naturalized, all the flowering crops were cut off, a year or two ago, to ascertain whether the bees of that country could not be forced to make honey from Eucalyptus blossoms; but the only result was the starvation of the bees, and for the present, at least, the sole source whence the honey can be obtained is Australasia. Here, however, it is said that its production will be undertaken as a regular industry.

Notes.

The new Strawberry, "Early Princess," is highly commended by fruit-growers in Minnesota.

Monsieur H. C. Baillon, the distinguished French botanist, has recently been promoted to the grade of officer in the Order of the Legion of Honor.

Mr. Charles Nichols, Superintendent of the Fairmount Cemetery, Newark, who is President of the Association of American Cemetery Superintendents, states in a recent letter that the membership of the Association has been nearly doubled this year.

The extent to which horticulture is pursued for pleasure merely in Belgium, is shown by the membership list of the Ghent Horticultural Society "Harmonie." In the City of Ghent alone it counts 2,000 members, and of these only 30 are professional gardeners.

The largest Sequoia yet found has lately been discovered, says the *Amador*, California, *Sentinel*, near the headwaters of the Kameah River, on a small basin surrounded on every side by a wall of rugged rocks. The hunter who found it in this almost inaccessible little valley reports that the tree's circumference at a point as high as a man could reach was 160 feet.

Professor Buckhout, of the State College, Pennsylvania, has planted two small plots of ground with forest trees for trial purposes, in connection with the Experiment Station of which Dr. Armsby is Director. One of the plots is on Tussey Mountain, rough and stony, and fairly representing the land which must be dealt with in re-foresting the mountain districts. The other is on the college grounds.

Colonel Pearson writes that the Bordeaux Mixture has proved an efficient preventive of the black rot of the Grape, as well as of Grape mildew. The formula for the mixture, as used this year, is, copper sulphate, six pounds; lime, four pounds, with water to make twenty-two gallons. The lime and sulphate are dissolved separately in hot water, and mixed afterward. With the Eureka Sprayer, made at Vineland, one man can spray five acres a day. If experience corroborates these results elsewhere, the Grape crop of the country can be saved from these two diseases at a trifling expense.

Mr. A. S. Fuller states, in *Orchard and Garden*, that although white varieties have long been known among the native Blackberries, Black Caps, and, in rare instances, among the low bush Huckleberries and Juneberries, there is no record of an albino of our wild red Raspberry (*Rubus strigosus*). Two or three years ago, however, a white Raspberry was detected in McKean County, Pennsylvania, and Mr. Fuller announces that it has fruited with him this summer, the berries being about the same size as the common wild Raspberry; but of a mild flavor, and, in color, almost white, with a slight yellowish tinge when fully ripe.

Dr. Richard Wettstein, according to the *Gardeners' Chronicle*, has published in the *Proceedings* of the Imperial Academy of Science of Vienna the results of his observations on the leaf structure of various reputed hybrids, such as *Pinus Rhaetica* ×, a hybrid between *P. montana* and *P. silvestris*; *P. Neilreichiana* ×, between *P. nigricans* and *P. silvestris*; and also various Junipers. The anatomical characters of the foliage of the hybrids in every case are intermediate between those of the reputed parents, and hence lend confirmation to the opinion that the forms examined are really of hybrid origin.

The production of the true Attar-of-Rose was long confined to the Orient, the Levant and the more southerly Balkan provinces. But during recent years the Roses best adapted for the purpose have been largely planted in the more south-westerly parts of Europe, and oil of a good quality has been there produced. One firm in South Germany, for example, imported, not long ago, 15,000 plants from Bulgaria; but the opportunity for such purchases will not again occur. The Bulgarian government, alarmed at the prospect of a competition which would seriously impair one of the most considerable sources of the country's revenue, has made more stringent a long-existing law against the exportation of Roses, fixing as a penalty the confiscation of the seller's real estate.

Mr. C. G. Pringle has completed the collection of wood specimens of the peculiar trees of the lower Rio Grande valley for the Jesup collection in the New York Museum of Natural History, and has now returned to Chihuahua for the purpose of continuing his investigation of the flora of the Sierra Madre. He has succeeded in securing for the museum fine specimens of *Helietta parvifolia*, *Koerberlinea*, *Condalia obovata*, *Acacia flexicaulis*, the Ebony of the Mexican Boundary, *A. Greggii*, *A. Farnesiana*, *Pithecolobium brevifolium*, *Fraxinus cuspidata*, *Leucana pulverulenta*, *Cordia Boessieri*, *Parkinsonia Texana*, *P. aculeata*, of the undescribed Palmetto which abounds on the banks of the Rio Grande below Brownsville, and of a very fine new Poplar, which is probably quite generally distributed from Saltillo, in Mexico, to southern New Mexico and Arizona. Mr. Pringle was able to secure for the Kew Museum a large trunk of the gigantic *Yucca filifera*.

"A very beautiful dinner-table decoration," says *The Garden*, "was lately arranged entirely with three varieties of single Roses. In some of the slender upright glasses were flowers in various stages of *Rosa macrantha*, and in others of Hebe's Lip, while below were bunches of the exquisite and delightfully fragrant *R. Brunonis*. The flowers, having been cut in the proper stage, lasted well for two days." Arrangements such as this, of a single kind of flower or of two or three closely related kinds, are certainly in much better taste as table decorations than the masses of mixed blossoms we often see, especially when the summer flower-garden offers its endless varieties for our use; and delicately shaped and colored flowers like single Roses, with their correspondingly dainty foliage, are better in place than the coarser or showier flowers which are usually considered "more effective." Neither in the linen, the glass nor the china with which we furnish our tables is showiness considered the most desirable quality; nor should it be in the flowers we employ.

When the English took possession of the island of Cyprus it was annually ravaged by grasshoppers to such a degree that its crops were hardly worth consideration. In five years, and at a cost of only some \$300,000, the insects were almost destroyed, and it now costs but \$8,000 a year to keep the land free from their ravages. The method used to such good effect is now being tried, with results which promise to be equally satisfactory, in Algiers and Spain. When a column of grasshoppers is known to be approaching, a screen formed of cotton cloth, about sixty yards in length and one yard in width, is stretched in front of it, sometimes in a straight and sometimes in a V-shaped line. Along the upper edge of the cloth a strip of oiled or varnished stuff is sewn, over which the insects cannot crawl; and in front of it great pits are dug, the borders of which are encircled by strips of zinc slanting downward. These pits are soon filled with the grasshoppers, which are trampled down by bare-footed natives, and buried under earth with which disinfectants are often mixed. According to *Le Génie Civil*, it is estimated that this year four hundred millions of grasshoppers were thus destroyed in Algiers by the middle of June. It is needful that the screens should be spread in the early morning, when the insects, benumbed by the night cold, are unable to fly over it, and that men should be employed to keep the column as compact as possible.

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The Forests of California.

WE begin this week the publication of a series of articles upon forestry, in its relation, principally, to the natural conditions of our Pacific coast. They are from the pen of Mr. Abbot Kinney, the President of the Forestry Commission of the State of California, whose opportunities for studying the actual condition of the California forests and the attitude of the people of that State towards them have been exceptional.

Perhaps nowhere in the world—certainly nowhere on this continent—is the preservation of the forests so important to the welfare of the entire population as it is in California. The physical conditions of the State are peculiar. It is made up of two mountain ranges running parallel with the coast, and inclosing a long, narrow valley, with many smaller, lateral valleys. The rainfall of the year is irregularly distributed, and is entirely wanting during the summer months, so that artificial irrigation is essential for many crops of the field, the orchard and the garden. The water for artificial irrigation must be brought from the mountains, where the snows of the previous winter, melting slowly under the protecting shadows of the forest, afford a constant and sufficient supply. If the forests which cover the mountains are destroyed the snow will melt more rapidly than it does at present, and the water will seek the valleys, not gradually, but suddenly and rapidly. The result will be that the water essential for irrigation will be wasted, and that the short rivers of California, with their precipitous beds, will be converted into torrents every spring and summer, and will gradually carry the soil and the rocks from high mountain-slopes down into the valleys, which, sooner or later, will be buried past redemption.

The future prosperity of California—the very existence of the State—is dependent, therefore, upon the forests which clothe her mountain-sides. These forests are still, in large measure, the property of the general government, and it is within the power of Congress to take measures for their protection. The disregard of the people of California for the property of the national government in that state, and for their own future prosperity, is a matter of

notoriety. Year after year vast herds of sheep and cattle and horses have been driven from the valleys at the beginning of the dry season to feed in the mountain forests. Long ago they stripped the forest-floor bare of every particle of vegetation, except the thorny chapparal bushes, and devoured every seedling tree. The sharp hoofs of sheep and goats have cut out the roots of perennial plants and worn deep, narrow paths across the mountain-sides, down which water can pour unchecked to the rivers. But this is not the only danger which the pasturage of the nation's forests in California has inflicted. As grass and bushes disappear from over-feeding, the shepherds set fires in the woods to burn away the trees, and so increase the pasturage area. The smoke of hundreds of fires may now be seen from any of the high Sierra summits, and it is merely a question of time, under existing conditions, when these forests will have disappeared forever. For forests do not reproduce themselves as easily in the dry climate of western America as they do in all the Eastern States; and if these mountains are once stripped of their tree covering, and the soil is allowed to wash away, their restoration will be the affair of centuries.

The commercial value of the California forests, although secondary to their mechanical value as reservoirs of moisture, is still very considerable. The Redwood forests, to be sure, are doomed, and no action of the general government or of the state government can be made operative soon enough to save them from extermination. The quantity of redwood which remains is comparatively small, the forests are too easy of access, and their product too valuable to make preservation possible, even if the people of California could be made to see the necessity for action in this matter. The Redwood belt of California contained, for its size, thirty years ago, by far the most valuable body of soft timber in the world; in less than thirty years more, Redwood trees of large size will be as rare and as great curiosities as the giant Sequoias are today, and California will have lost her most valuable inheritance.

High up on the slopes of the Sierras, however, there are immense quantities, in the aggregate, of sugar pine still remote and inaccessible, which the general government might well attempt to save for future use when the white pine of the east, the cypress of the south, and the redwood of California have all disappeared before the recklessness of American methods. For in the Sugar Pine belt of the Sierras will then be found their only substitute, not in quantity, but in the quality of the material it can furnish.

If the general government of the United States ever makes the attempt to protect the forests which are found upon the national domain, it is in California that the experiment should be begun, because in California the forests are more essential to the welfare and development of the state than in any other part of the country.

The proper use of herbaceous plants, with more or less showy and conspicuous flowers, in the adornment of parks or of lawns—that is, outside of the flower-garden proper, in which such plants are the most useful and attractive feature—is a matter requiring much judgment and skill in the selection and in the use of material. Indeed, there is no form of planting, perhaps, which is more difficult to master, and which is, within certain limits, at least, more disastrous in effect when it is not well done. That this is not an exaggerated statement, an examination of the attempts which have been made in recent years to introduce these plants into the Central Park in this city, or in the Fens in Boston, will show. Clumps of the *Funkia* or *Day Lily*, in itself a beautiful plant, well suited to the flower-border, for which its round and formal mass of foliage well adapts it, placed in front and in connection with loose masses of deciduous shrubs in the Central Park, produce the worst effect, destroying simple sweeps of turf and all idea of naturalness, while the spotting about of single plants of *Pæony* and

other garden plants in front of shrubs, or often in the lawns at a considerable distance from shrubs, detracts from rather than adds to the beauty of the park. Indeed, it would be vastly benefited if all such inharmonious elements were cleared away and greater simplicity and naturalness allowed to prevail. All such plants are clearly out of place outside the flower-garden. In the Fens, as a part of the new Boston Park system is called, where the attempt is made to connect a salt marsh with the roadway surrounding it, by means of slopes planted in imitation of nature, the effect has been curiously marred by the introduction among the shrubs of great numbers of showy flowered perennials—garden Phloxes, Carpathian Harebells, great masses of brilliant Monardas, Yuccas from the sandy fields of the South, and many more incongruous and inharmonious plants, which seem curiously out of place on the margin of a New England salt-marsh.

There are herbaceous plants, however, which, if used with discretion, can be made to add to almost any landscape, however natural its motive or simple its composition. We have already pointed out in these columns how several varieties of bulbous plants can be used naturally on the margins of woods and shrubberies with the most charming effects, but there are many more robustly growing plants, especially among those which flower at this season of the year, which, if used sparingly, in connection with shrubbery, can be made to play an important part in the decoration of parks. Those herbaceous plants which, when fully grown, approach shrubs in outline, are the best for this purpose, and generally can be used with safety in connection with shrubs. The Flora of North America abounds in such plants—perennial Sunflowers, Silphiums, Rudbeckias, Vernonias, Asters and Golden Rods. No country in the world possesses so many handsome plants of this sort as North America, but they are little known yet except by a few botanists, and their really great decorative value is not appreciated. There is nothing in the habit of such plants which jars upon the most refined taste when they are planted among shrubs, while their flowers, which appear long after those of nearly every shrub have disappeared, light up the shrubbery brilliantly. Even these plants, however, should be used cautiously and never in great masses, in connection with shrubs. A shrubbery in the United States in late September on the borders of which are blooming, just in the right places, a Silphium and a Vernonia, a Sunflower, or one of the great Rudbeckias, is an object not easily forgotten.

August in the Pines.

IT is late in August, and waning summer has held some of her choicest floral treasures until now. On the borders of a pond stands the handsome *Sabbatia chloroides*, its loose panicles of deep rose-colored flowers showing to best advantage against the delicate green of the grasses and sedges about it. Two other species of *Sabbatia* are near by—*S. lanceolata*, which has a flat panicle of white flowers, and *S. stellaris*, with rose-purple corollas almost as beautiful as the first mentioned; the flowers, however, are smaller.

And here among the grasses is the rare *Coreopsis rosea*, with yellow florets and rose-colored rays. *C. lanceolata* is also here, with bright yellow flowers, and rays an inch or more in length. Both species are not only beautiful here, but they will help to brighten any garden, for they take kindly to cultivation.

The pretty Mist-flower (*Conoclinium celestinum*) is just coming into bloom. Its corymbs of blue flowers are as fine as any of the garden Ageratums, which it closely resembles. The climbing Hemp-weed (*Mikania scandens*), with flat corymbs of pale pink flowers and halberd-shaped leaves, is twining over bushes, and hanging out from the main plant are many graceful, drooping sprays swaying in the wind.

The bright orange flowers of *Polygala lutea* are more abundant this month than last. These, together with the Mist-flower and sprays of the climbing Hemp-weed, form a charming combination for house decoration.

Our Pine-barren Gentian (*Gentiana angustiflora*) is just beginning to open its lovely, blue, funnel-shaped flowers. The corollas are two inches in length and quite open. It is almost as pretty as the Fringed Gentian—the queen of these flowers—which has a wide range from New England to our Barrens, and probably further south.

The Shell-flower (*Chelone glabra*), which also has a wide range, finds a home in the Pines, and its companion, the Monkey-flower (*Mimulus ringens*), is here, too. The Purple Gerardia is abundant among the grasses, and is one of our beautiful plants that does not make itself at home in gardens.

Tall plants of the large, showy Rose-mallow (*Hibiscus Moscheutos*), with corollas six inches or more across, are standing like sentinels over their more humble neighbors. Some of the flowers are white with a crimson eye; others are pink and rose-color. The plants and flowers are larger and more stately than the Hollyhocks of our gardens.

Many shrubs and trees are beautiful now in their mature leaves and fruit. *Magnolia glauca*, with its shining, glossy leaves, and red, cone-like fruit, is more handsome now than when in flower. The leaves are perfect, neither insect nor fungus have marred their beauty, and nothing can be more charming for house decoration in large vases than small branches of this Magnolia, with the central fruit surrounded by the rich foliage. The leaves of the Sumach (*Rhus copallina*) are also of the deepest shining green. They have not yet taken on their rich, autumnal tints, and are as perfect as the Magnolias—neither moth nor rust hath corrupted them.

The treacherous poison Sumach (*R. venenata*) is holding out its tempting, beautiful foliage. To many persons it is harmless, but to me it is a virulent poison, and I cannot restrain a cry of fear as I come suddenly upon it, whereupon a boy near by, who is catching frogs, calls out: "Tain't pizen; I have eat it lots o' times," and then he pulls off a handful of leaves and vigorously chews them. On expostulating with him he clinches the argument with, "I know 'tain't pizen. Pop says it won't pizen a chicken." And with lofty scorn for my terror, he continues to chew the leaves so harmful to me, while pursuing his amphibious game.

The Pine-barren Sunflower (*Helianthus angustifolius*), with narrow, long, almost grass-like leaves, is in bloom. This is a very marked and distinct species, and I have never noticed that it hybridizes with any of the other Sunflowers. Some of the plants are six to seven feet in height, full of bloom and very attractive. It does fairly well in cultivation.

Passing from the damp Barren to the dry, sandy woods, I find the Yellow Gerardias (*G. flava* and *G. quercifolia*) in flower, with inflated tubes somewhat of the form of our garden Foxgloves. Fine plants of *Rudbeckia fulgida* are also in bloom, which are always attractive, with their bright, orange-yellow rays, and dark, rounded disks. And here, too, is the Golden Aster (*Chrysopsis Marianna*) and the showy Double-bristled Aster (*Diplopappus linariifolius*), with numerous violet rays and many narrow leaves along the entire length of the stems.

The Blazing-star (*Liatris scariosa*), with long spikes of rose-purple flowers, commands our attention by its erect and stately bearing, while in contrast with it, the Rattlesnake-weed (*Hieracium venosum*) holds its rosette of leaves, which are beautifully veined with purple, close to the ground. From the midst of the leaves rises a slender, naked stem, which branches at the top into a loose corymb of pale yellow flowers.

Away back from cultivated ground, by the side of an old, deserted, nearly obliterated wagon-road, is the Pimpernel, or Poor Man's Weather-glass (*Anagallis arvensis*),

claiming a place among our flowers, and the wonder is how it ever came here. But it is closing its pretty, scarlet flowers, telling us that rain is coming and that our ramble must end.

Mary Treat.

Vineland, N. J.

Foreign Correspondence.

London Letter.

Olearia Haastii.—This New Zealand composite shrub is now among the most attractive ornaments in English gardens, for of late years it has been used largely in gardens, large and small. A few years ago one could only see it in botanical collections, but, since it has proved hardy everywhere, the wholesale nurserymen have taken it in hand, and it has become diffused throughout Great Britain. In a garden in Kent I have this week seen enormous bushes of it completely whitened with its small Daisy-like blossoms. In one case it was quite seven feet high and as many across. When large it is not such a compact bush as when only a yard or so high, but its leggy growth can be corrected by hard pruning in spring. It is a capital evergreen, and one that stands a smoky atmosphere well, and is therefore much used now in town-gardens. I do not know how many degrees of frost it will stand, but during the severe cold in 1879 and 1880, and also last year, it was unscathed with the thermometer at +12°. I imagine it is hardy enough to endure the winters of your Middle States. Small plants are used with fine effect for lawn-beds, mixed with some bright-colored plant that flowers at the same time, such as *Gladiolus Brenchleyensis*, whose brilliant scarlet spikes make a fine contrast with the white blossom. When out of bloom it reminds one of the Balearic Box.

Salvia azurea grandiflora, which goes also by the name of *S. Pitcheri*, is one of our most useful green-house flowers in summer, and is now in perfection. It is an easily grown pot-plant, or it may be planted in the open border, though it is liable to be winter killed sometimes. We have nothing to compare with this *Salvia* when in perfect bloom. Its spikes of bloom, of the richest azure-blue, are often six inches or nine inches in length, and as the flowers open in succession the plant is attractive for weeks. The plants may be kept from year to year, but early spring-struck cuttings make fine flowering plants by summer, and are more vigorous and flower freer than old plants. Some very charming effects may be produced in the green-house by grouping this Blue Sage with some graceful white-flowered plant, such, for instance, as *Francoa ramosa*, which flowers at the same time. As this *Salvia* is not mentioned in Gray's Manual, I presume it is a native of Mexico, hence its tenderness. [*Salvia azurea*, var. *grandiflora*, is a native of the south-western States from Mississippi to Kansas, Colorado and Texas.—ED.]

A good garden Rose is one called The Pet. It does not grow more than a couple of feet high, makes a wide-spreading mass of shoots, clothed with broad, deep-green foliage, and every shoot terminates in a huge cluster of small white flowers, which, in a bud stage and till half opened, are of a delicate rose pink. It is becoming a great favorite in English gardens, as it is found so useful for cutting.

Lilium auratum is exceptionally fine this season when planted in light soils. The long continuance of heavy rains seems to have suited it wherever the superfluous moisture could drain away quickly, but in heavy soils, even where special lily-beds are prepared, it has been a failure. It is very impatient of stagnant moisture at the root; on the other hand, a moist atmosphere seems to favor a strong growth. In Kew Gardens, at the present time, this Lily is magnificent, intermixed with Rhododendrons in a deep, peaty soil. In many cases the stems are six feet high, as thick as a broom-handle, and bear enormous heads of flowers, many of them fasciated. The finest varieties, too, of *L. auratum* have showed well this season. I saw, the other day at Veitch's, the splendid variety named *Platyphyllum*, which has leaves twice as long and broad as the type, and with flowers nine inches across, with a broad band of gold down the middle of each petal. The variety *Cruentum*, or, as it is often called, *Rubro-vittatum*, I have seen very fine lately in several gardens. The broad band of crimson which runs through each petal of white renders it an extremely showy plant. All Lily-growers on this side, by the way, are anxiously awaiting the time when Parkman's Lily (*L. Parkmani*), a magnificent hybrid between *L. auratum* and *L. speciosum*, will be obtainable by purchase. When I was at the Knap Hill Nurseries last (Mr. Anthony Waterer holds the entire stock of this Lily) I was told that it would be distributed soon. The stock looks very strong

and it seems to be a very robust grower. Your readers may not all know that Parkman's Lily was raised by Mr. Francis Parkman, the historian, twenty years ago. It has flowers a foot across, in shape like those of *L. auratum*, and every petal is a brilliant crimson, broadly edged with white and with a gold band down the centre of each. Other Lilies will be envious when this one appears.

A Hardy Banana is an interesting novelty. It is a species of *Musa* from Japan, growing in the open air in Messrs. Veitch's nursery, and is likely to prove perfectly hardy in England, inasmuch as it has withstood the frosts of the past few seasons with but little or no protection. It has as large leaves as the common Banana, but its growth will, I think, be more like that of the Abyssinian Banana (*Musa Ensete*). The value of a hardy, noble-leaved plant cannot be overestimated, for with it our gardens, without much cost or trouble, may be made to assume a sub-tropical aspect.

London, August 18th, 1888.

Wm. Goldring.

New or Little Known Plants.

Deutzia parviflora.

THE fine *Deutzia* of which a picture appears upon page 365 of this issue, although but little known in gardens, yet is by far the most beautiful of the three or four species now cultivated. It is a native of northern China and the Amoor country, and was sent a few years ago from the St. Petersburg garden to the Arnold Arboretum, whence it has found its way into a few of the principal collections of the United States.

Deutzia parviflora is a stout shrub, with upright stems four or five feet high, covered with exfoliating brownish yellow bark, and sharply serrate, dark green, elliptical or lanceolate leaves, which are pale and conspicuously reticulately veined on the lower surface. The corymbs of handsome white flowers appear here generally during the first week of June, and are produced in the greatest profusion, quite covering for several feet the upper portions of the stems. Maximowicz, in his revision of the genus *Deutzia*, describes nine species. They are all Asiatic, three belonging to the temperate Himalaya region, two to northern China (of these the large-flowered *D. grandiflora* should be a real acquisition in gardens) and four to Japan. There is a very complete analytical drawing of *D. parviflora* (t. iii., Figs. 18-32), in Maximowicz's Revision, published in the tenth volume of the *Mémoires de l'Académie des Sciences de St. Pétersburg*, 7^{me} série, x, and it has been figured by Regel in his "*Flora Ussuriensis*" (t. v., figs. 7-14) and in the *Gartenflora* (1862, t. 370).

It is one of the hardiest and most desirable of the Asiatic shrubs of recent introduction. C. S. S.

Cultural Department.

The Species of *Gladiolus*.

THE genus *Gladiolus*, as at present defined, includes about ninety species. The latest authoritative review of the family to which the genus belongs is in the "*Genera Plantarum*" of Bentham and Hooker, and this differs considerably from Mr. Baker's in the sixteenth volume of the "*Journal of the Linnean Society*," under date of 1878; and as we go backward along the line of botanical literature we find very great variety and even confusion of views as regards the genus. Species of *Ixia*, *Anomatheca*, *Watsonia*, *Acidanthera*, *Tritonia*, *Babiana*, etc., have been considered *Gladioli* by various authors, and many now called *Gladioli* have been previously referred to *Homoglossum*, *Watsonia*, *Geissorhiza* and other genera.

The genus is somewhat widely dispersed. Though by far the greater number of species are South African, one, *G. Illyricus*, strays as far to the north and west as the New Forest in England, and others are found on the Mediterranean coasts and islands and as far eastward as Persia and Afghanistan. A few occur on the western coast of tropical Africa and a few on the eastern, while three or four are indigenous to Madagascar.

This wideness of range indicates great dissimilarity of constitution and requirements among the species; accordingly we find some that flourish with vigor under cultivation and others that die away in spite of all our pains; some that will endure, unprotected, the rigor of a New England winter and

others that will tolerate no frost at all. As the hardiness of a plant, however, does not depend upon temperature alone, the native country of a species affords no sure indication of its ability to withstand severe cold.

The species of the north temperate zone are not, as a class, as showy as the tropical kinds; yet, in their way, they are very beautiful, and, as far as I have tried them, perfectly hardy. According to Baker's enumeration there are fourteen of these and several well-marked varieties. Few of these are in cultivation, though some of them are very desirable, especially the purplish blue *G. Kotschyanus* of Persia.

I find that *G. Byzantinus*, *G. communis* in its three varieties, *G. imbricatus*, *G. Illyricus*, *G. segetum* and *G. triphyllus* withstand the cold of our winters very well, though the last named, a Cypriote species, is a little tender unless in well drained soil and even then it is better for a covering of leaves. It will be found, indeed, that all of these kinds will do better with some protection; and, in fact, without it will increase very slowly, if at all.

The African species are the most satisfactory for horticultural purposes, being, in the main, more beautiful than the others and generally very easy of cultivation. A few of them attain the height of stalk and something approaching the size of flower of the gorgeous garden hybrids so generally cultivated under the name of *G. Gandavensis*.

The following species are best treated as the hybrids just mentioned; that is, planted in the open ground in May and taken up again in October. They may be kept in boxes in a cellar where the winter temperature is about 40° Fahr.

G. purpureo-auratus.—This is a native of Natal. It has stiff, narrow and somewhat glaucous foliage, and a slender but rigid flower-stalk about three feet high. The flowers are from six to ten, of a peculiar shape, the upper segment being curved over like a hood. They are not large, an inch and a half being the average breadth, and are yellow, with blotches of a color between crimson and purple. The ground color is by no means as strong and pure a yellow as in the figure in the *Botanical Magazine* (t. 5944), but rather somewhat greenish. This species is likely to be better known in its offspring than in its own person, for it is one parent of the "Lemoine hybrids," so-called, which are remarkable for their vivid blotches and their peculiar shape; both of which characteristics are derived from the species under consideration.

G. purpureo-auratus seldom seeds from the influence of its own pollen; such, at least, is my experience, for though I grow a great many every year in one mass, from the seed of which I have raised many hundred plants, I have never had but two seedlings which did not show the influence of the *Gandavensis* varieties growing near them. This species forms a great many bulblets which lie a little way from the old corm, to which they are joined by short connectives. They have a thinner coating than those of the *Gandavensis* sorts and start into growth more readily. This is the hardest of the African species. I have known it to come up for several years among the grass in a mowing-field.

G. floribundus.—This is a very pretty low-growing kind, bearing from ten to twenty blush-white flowers on a stem about eighteen inches high. These are never fully open as we are accustomed to see *Gladioli*, but retain a half-closed appearance. They are usually somewhat crisped along the edges.

G. cardinalis.—A very brilliant scarlet and white species of low stature and great beauty. The bulbs of this, as well as of the hybrids of which it is a parent, viz., *G. Colvillei*, *ramosus*, *pubibundus*, *candidus* and *incarnatus*, will not endure being kept long out of the ground; at the same time, if left in the soil late in the summer they will make an autumnal growth to which the winter will be fatal; they ought, therefore, to be lifted a month after flowering and replanted in October either in a frame or in a raised bed of earth with a thick covering of leaves.

G. cruentus.—This is a magnificent species from Natal. Its manner of growth is very peculiar, for, while many kinds may be put into the ground on their sides or tops, as well as on their bases, the shoots arising perpendicularly from the soil, the shoots of this species appear to grow straight away from the centre of the corm and hence enter the air at all angles. The foliage is drooping, unlike any other kind, while the bulb is dissimilar to all others, being bright yellow, almost globular and scantily covered with a very thin papery husk. The flowers, though few, are very showy, deep crimson with an irregular band of white across the three lower segments. They are four and sometimes five inches across.

G. cruentus has one bad fault; it is a very late bloomer. This can be offset by early planting by those who can plant when they please.

G. psittacinus.—A peculiar and not very showy species. It has short, rigid foliage and flower-stalks about two feet high. The flowers are yellow, thickly dotted and lined mahogany red; throat yellow. The flowers are narrow and appear to only half open. Seedlings from this vary somewhat, though unmixed with any other kind. Among twenty raised from pure seed there are six which differ considerably from their parent, though plainly *G. psittacinus*, and nothing else. One or two of these are very handsome. This species and the next increase more rapidly, both by bulblets and by growth from the buds of the old corm, than any others I have seen; unhappily, they are the least desirable.

G. dracocephalus.—A very tall species (four and one-half or five feet), with a spike of narrow, inconspicuous flowers, green, spotted and grained with dull red. This, on my grounds, never has perfect anthers, and I have never been able to get a grain of pollen.

G. Saundersii.—This very beautiful species is offered for sale by nearly every dealer, and is, presumably, better known than most others. Its foliage is short and quite glaucous; the flower-stem not high and its flowers large and very showy, being scarlet mottled on the lower half with white; their form, also, is very elegant. Taken for all in all, this is one of the very best species.

The following being small in bulb and plant and flower, will give most satisfaction as pot plants. They should be grown in four or five inch pots in light, rich soil, and should, for the most part, be potted in late autumn.

G. tristis.—Like very many of the African species, this has narrow, almost rush-like foliage. I have been most pleased with this plant when I have potted the bulbs in autumn and kept them through the winter in the green-house, though like many, perhaps all, of the tender species, it may be successfully carried through out-of-doors if deeply planted in a dry soil and well covered with leaves. With me it blossoms in April, the flowers being four or five, comparatively large, of a light creamy tint, sprinkled with small dark spots, and strongly fragrant from dusk to dawn. How excellently adapted to insect fertilization! How plain that it is fecundated by some nocturnal moth allured by the large light flowers, whose powerful fragrance exists only during the hours of darkness! Unhappily for the theorists, who know so well why fragrance was given to flowers, however, *Gladiolus tristis* is perfectly self-fertilizing. It does not depend upon nocturnal or diurnal insects, but every blossom, even when protected from insect visits by gauze, will form a capsule of perfect seed. From such I have raised scores of seedlings. It is to me evident that perfume is not always (even if ever) provided to insure fertilization by means of insects.

G. recurvus, called also *G. ringens*, is best treated like *G. tristis*, as it is a weakly-growing kind. Its flowers, though few, are very pretty, being of a shade of lilac approaching blue, with a whitish throat.

G. gracilis.—A slender plant, with two or three lilac and black flowers. Though apparently hardier than many sorts, it is too delicate for the open ground.

G. cuspidatus.—Another rush-leaved kind, with flowers of a singular shape. Their segments are very long, narrow and twisted. Color, creamy white, blotched with purple and yellow.

G. villosus.—I received this three years ago and have been very unsuccessful with it, having seen, so far, but one flower. This was borne on a stalk ten inches high and was of a pinkish color. The entire plant is covered with short, fine hairs. Hence its name. This is not the *G. hirsutus* of Jacquin, but of Ker.

G. Milleri is a pretty species of small stature, with light yellow flowers.

G. alatus.—I have tried this species many times, but all in vain; it will not flower nor can I keep it. The bulb starts readily enough and so does the seed when obtainable. I have now over a hundred seedlings three years old and no larger than a grain of rice. If we may trust the published figures, this is one of the most beautiful species. Its colors are scarlet, yellow and orange.

G. sulphureus, considered by some to be a variety of *Babiana stricta*, is a small species, but robust enough to maintain itself in the open ground. Flowers few, yellow, but of a deeper shade than the name implies.

G. Watsonius.—This is called by Baker a species of *Homoglossum*, a genus not admitted by Bentham and Hooker. I have had it only during the present season. In April I received fifty bulbs of it from the Cape of Good Hope, some of which I found had started into growth. I potted them and they bloomed in June. The foliage is plaited in four strong



Fig. 57.—*Deutzia parviflora*.—See page 363.

folys. The flowers are of an intense vermilion color. A very desirable kind.

G. carneus.—At least four different plants have borne the name. I seem to have the one figured in Redoute's "*Liliaceæ*." It is pretty, though not showy. The ground color is pink with darker blotches on the lower segments. I have known

this to endure a severe winter out-of-doors and blossom well the following June. I prefer to cultivate it in a pot.

I have many other species which I have not yet seen in flower, and of which I do not now wish to speak. At some future time I hope to describe them from my own knowledge.

Canton, Mass.

W. E. Endicott.

The Vegetable Garden.

DURING the week of the Florists' Convention leading seedsmen of the city had special exhibitions of flowers, and some of them of vegetables as well, in their stores. In one of these the display of vegetables was excellent in itself, and, as everything was carefully and legibly named, the interest in, and usefulness of, the exhibit, was thereby much enhanced.

The mammoth Sugar Corn showed its superiority. It is a capital Corn, with large, well-filled ears and white fruit, but rather too big for table use. Most people prefer smaller Corn, like Squantum. Cucumbers showed nothing better than White Spine. Under the name of White German were exhibited large, white-skinned Cucumbers; but either for market or private use the green-skinned Cucumbers only can become popular. A large and beautiful specimen of the new Watermelon, "Green and Gold," cut open, was exhibited. The flesh is solid throughout, and of a butter-yellow color, and the rind quite thin. But no matter how delicious this Melon may be, the popular Watermelon must have red flesh and black seed. Kolb's Gem is such a Melon. It was exhibited, cut open, alongside of Green and Gold. The Hackensack was shown as the standard green-fleshed Muskmelon in the neighborhood of New York, and so it is. It is a large-fruited variety, rather coarse, but of good quality. The vines are vigorous growers, and bear a heavy crop of large, even-sized fruit, and it shows

largest Pepper, and no doubt will become the most popular variety. Celestial Pepper, a variety introduced from China three years ago, and first distributed this year, was also shown. The fruit is under medium size, green at first, changing to yellow tinged with purple, and ripens off scarlet. It is as pungent as most other Peppers. It is extremely prolific, and the fruit stands upright on the plants instead of nodding, as is the case with most large Peppers. It will hardly gain a foothold in our gardens except as an ornamental plant.

White Velvet was the conspicuous Okra. This is a new variety of dwarf habit, and with long, round, white pods. But, except in fixing the dwarfness of Okra, I question if we have lately made much progress in it. I sowed all the popular varieties May 24th last in rows alongside of each other. On July 25th we were picking from Dwarf Density, but not from any of the others. We did not begin picking from White Velvet till August.

A green plant of the new Dwarf Sieva Bean was shown full of seed-pods. In its line it is a decided acquisition. With it we can enjoy these delicious Beans without the bother of poles. The Dwarf Lima Bean was also exhibited full of green pods. A really dwarf Lima will be one of the most desirable vegetables ever introduced. We cannot reasonably expect to gather as heavy a crop of Limas from dwarf as from pole plants, nor that the dwarf plants would continue as long in bearing green Beans; but for many amateurs these dwarf

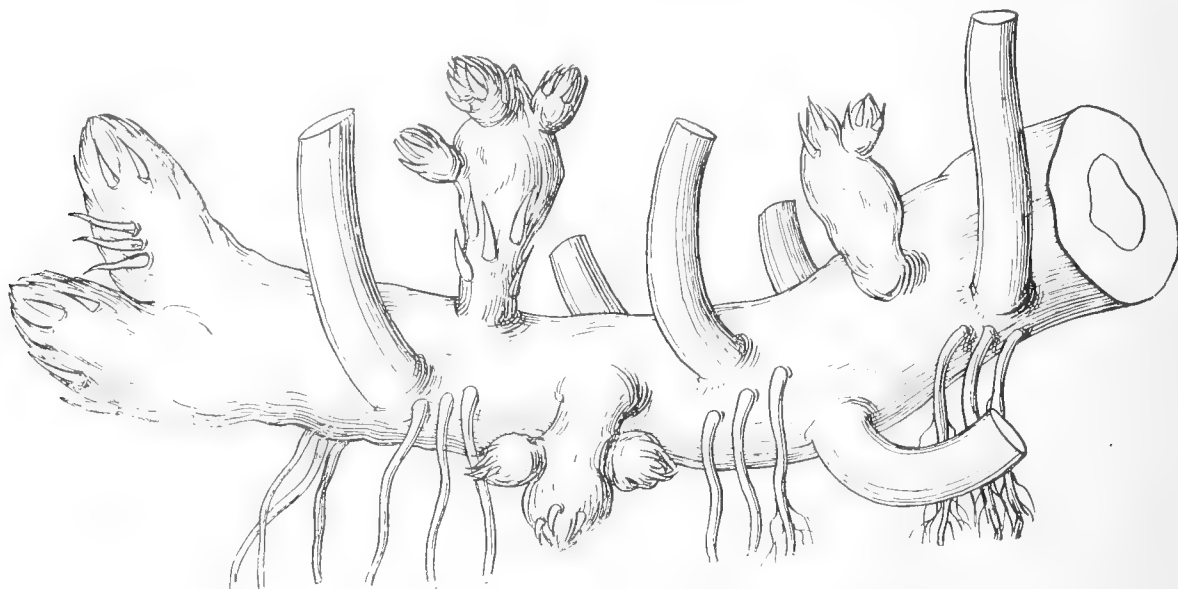


Fig. 58.—Root-stock of *Nymphaea tuberosa*.—See page 368.

less tendency to premature decay than any other variety. Among salmon-fleshed varieties, Emerald Gem has no superior; indeed, it is as good in quality as the much-lauded European varieties grown in warm green-houses there, but which cannot be grown satisfactorily out-of-doors in this country. It is not a large Melon, but its flesh is exceptionally thick, sweet, buttery, and ripens up to the thin rind. Indeed, Emerald Gem as a red-fleshed, and Hackensack as a green-fleshed Melon, are our standard varieties around New York.

Among the many Tomatoes, Acme, Perfection and Trophy were as handsome as any. Mikado was the largest, perhaps, and a yellow-skinned form of it was also shown; but although yellow-skinned Tomatoes, such as Green Gage and Golden Queen, may have their special uses and friends, the popular Tomato must be red-skinned, and of round, even outline. An uncommonly large, reddish-fruited variety, named President Garfield, of very uneven form and many-ribbed, showed plainly what ought to be avoided among Tomatoes. The Dwarf Champion Tomato, sent out last year as a new variety, has round, even, fair-sized red fruit, and is really a desirable sort. It is of more compact growth than the other Tomatoes, and quite prolific, but it will not stand erect without supports any more than any other variety. Thirty-seven dishes of the Puritan Potato occupied one table, and represented the products of every section of the country.—Maine, California, Texas, Georgia and other states. The Georgia tubers were the finest. This is a new Potato, raised by Mr. Coy from seed saved from Beauty of Hebron in 1882. The tubers are white-skinned and of the form of the well-known Snowflake. The Beauty of Hebron also originated with Mr. Coy. Ruby King was the

Limas will be valuable, because they will do away with the annoyance of getting and keeping and setting up bean-poles.
Glen Cove, N. Y. Wm. Falconer.

Orchids.—*Phalanopsis Mariae*.—This is a somewhat rare species, very strong in growth, producing a drooping, branched spike bearing a number of white flowers, barred and blotched with amethyst, the crimson lip being edged with white. Coming from Borneo, this plant requires abundance of heat and water, and should at no time be allowed to become dry. It seems to do far better with us in a tall cylinder than in a basket. The roots running to the bottom and forming quite a network, both inside and out, we use scarcely any potting material in the cylinders, but water overhead three to four times a day.

Lalia crispa.—Plants of this useful species are now in full beauty. Though an old and comparatively common Orchid, one seldom sees it in good condition. It is often too much coddled and grown too hot. All the best-grown and well-flowered specimens I have met with were grown under cool treatment, and some of the spikes have had ten or twelve flowers, and very large, while the usual number is but five or six. It is a beautiful Orchid, and did it but flower in midwinter would be highly prized by florists. The flowers are five to six inches across, pure white, and much curled or twisted. The lip is a rich crimson, edged with white, and beautifully crisp. It will grow well under the same treatment accorded to *L. anceps*, and, like it, prefers not to have its roots at all confined. The white variety of *Lalia elegans* may be had in flower nearly every month in the year—that is, if the plant be very

large, as the growths never appear all together. The individual spikes are very beautiful, and when cut, need only the addition of a few Ferns to make a handsome bouquet. This variety requires an intermediate temperature, abundance of air, and as much sunlight as can be given without burning the leaves.

tion to its great beauty it is interesting as being the first hybrid *Cattleya* artificially produced. Like all of this section of two-leaved *Cattleyas*, it is very difficult to keep in good condition for a long time, but it is now growing freely in the warmest end of the house. It should be kept somewhat cool and dry during the resting season.



Fig. 59.—*Nymphaea tuberosa*.—See page 368.

Cattleya hybrida picta.—This is a very pretty hybrid between *C. guttata* and *C. intermedia*, in growth partaking of an intermediate character, while the flowers are more in the way of *C. guttata*, being of a pale olive green, beautifully speckled with purple, the petals being margined with pale rosy mauve. The front lobe of the lip is a deep purple, the lateral lobes and the column pure white. This is a very rare plant, if not the only specimen, while the typical hybrida is now lost. In addition

Phalanopsis Esmeralda.—This is a small-flowered but very attractive Orchid, and very useful, because flowering at a season when every flower is appreciated. It produces racemes from one to two feet long, sometimes branched, bearing eighteen to twenty flowers of a beautiful amethyst color, lasting a long time in perfection. There are many varieties, the best being *Regnier*, with larger and brighter-colored flowers. We have been most successful with these plants when grow-

ing them in a mixture of peat, loam and leaf-mould, with a little sphagnum moss, and potted in either pots or pans. They should have strong heat and abundance of water during growth, and should be kept very dry during the winter. They can be very easily propagated. The stem, which is made very quickly, may be cut into lengths of about an inch, potted into small pots, and put into a close frame. Every piece will break and make a nice plant in one season.

Kenwood, N. Y.

F. Goldring.

Ranunculus.—Representatives of this genus are found in all temperate regions of the globe. The majority are natives of the northern hemisphere. *R. Lyalli* comes from New Zealand; *R. cortusaeifolius* from the mountains of Teneriffe; *R. bulbosus*, *R. acris* and *R. aquatilis* are found in every temperate part of the globe, though probably, in many cases, naturalized. All enjoy a moist soil. General neatness of habit and the free production of blooms characterize all the species; and although the flowers, which are nearly always white or yellow in color, are often small, yet the neatness of their arrangement and symmetry of form always make them attractive. The majority are adapted for culture in the rock-garden.

The Persian and Turban forms of *R. Asiaticus* were once largely used for spring bedding. It used to be the pride of the old-time gardeners to "do them well." The art of doing them well now seems to be lost. It is a long time ago since I saw an unbroken, compact bed of them. Success is best attained by spring planting, especially in this country. As soon as the foliage begins to turn yellow they should be taken up and carefully matured in moderately moist sand. We must expect failure as long as we keep cutting them over as soon as past blooming, and otherwise disturbing them in order to plant Geraniums, Coleus and other summer bedding plants. It is further necessary to have the soil previously enriched—say, with a surface dressing of manure in the fall: Manure freshly put on in spring encourages the millepedes, which prey on bulbous plants when at rest, if left in the ground. It would be better if all bulbous plants were taken up after ripening.

A selection of the best kinds for the rock-garden include *R. acris*, fl. pl., otherwise known as *R. speciosus*, pl., a good double yellow; *R. amplexicaulis*, with large, pure white flowers and glaucous foliage; *R. anemonoides*, of dwarf habit, flowers white, pink-tinted, almost stemless, with elegant, glaucous, much-divided foliage. *R. Ficaria* is the common Pilewort. In some parts of England it is a common weed, growing under trees where grass refuses to grow. Under cultivation it is quite a pretty plant, its flowers coming double. *R. fumariaefolius* has elegant Fern-like foliage, and small, double yellow flowers. *R. spicatus* is a very rare tuberous-rooted species from northern Africa, adapted only for culture in the green-house. If only for its being a distinct and peculiar Buttercup, it is worth growing; but it has handsome palmate foliage, and large yellow flowers, appearing and flowering only in the fall and winter, and dying down towards spring.

T. D. Hatfield.

Roses.—Pot-grown Hybrid Perpetuals for early forcing should now be ripening their growth, as only solid, well-ripened wood may be depended on for this purpose. And in this ripening process some care is necessary, as they should not be allowed to become so dry that the wood shrivels, as such a condition works injury rather than benefit to the plants, and usually results in a weak growth and few flowers when forced. Hybrids grown in the open ground during the summer, and lifted in preparation for winter forcing, are frequently better if held back so as to come in as a second crop; the pot-grown plants being used for the first, as the roots of the latter are likely to be in a better condition to stand the extra exertion of early forcing. If regular Hybrid houses are used, in which the Roses are planted out in solid beds or on benches, the growth will be more readily matured by stripping off the sashes during the summer months and leaving them off until cold weather, provided the season is not too damp, as in the latter case the shoots remain too soft and sappy for early work. And in the planting of such houses it is well to group the varieties used, so that the earliest sorts may be planted in one house, or section of a house, and those more obstinate in regard to forcing may be placed by themselves in another section, to be used for a later crop, thereby insuring a succession of bloom. For instance, such Roses as Anna de Diesbach, Magna Charta and possibly Mrs. John Laing may be used for early flowers, to be followed by Paul Neyron, Baroness Rothschild, Mabel Morrison, Captain Christy and Alfred de Rougemont, and a number of others equally good for this purpose, if it is thought desirable to use a more extended list. One variety in particular, the ever-popular

General Jacqueminot, should certainly be added to either or both catalogues, for, when properly managed, this old favorite may be flowered as early as any of its class

"W."

Philadelphia, Pa.

Quinces on Apple Stocks.—A correspondent wishes to know whether he can grow Quinces on Apple stocks by the root-grafting process, and whether the quality of the fruit would probably be affected?

Yes, he can grow the Quince in this way. The so-called Meech Quince has been propagated by tens of thousands in this way. Whatever effect this mingling of blood might exert upon stock or graft can hardly be known, but the effect on the fruit would probably be slight. The Quince is generally and readily grown from cuttings in moist soils. Its tendency is to make a mass of fine fibrous roots. The Apple makes no such mass, and if its roots were the sole dependence of graft and stock the growth would probably be affected. But as both stock and graft are planted below the surface of the ground, the Quince would eventually root, the Apple stock acting as a support or starter till the Quince roots were produced. This is the result in the case of Dwarf Pears on Quince stock. When the Pear stocks root above the Quince, the trees become standard Pear trees, and the Quince stock finally dies or becomes so enfeebled as to be of no further use, because, perhaps, their natural rooting place is near the surface. Whether this would be the final result of the Apple and Quince union I do not know, and I hardly think the practice has been tried long enough to determine. My experience with Pears on Apple stocks is that they make a feeble growth for a few years, and finally die. The incompatibility is fatal.

Time and experience with the uncongenial affinities of Pear and Apple has tended to materially modify the Dwarf Pear craze, so popular twenty-five years ago, so that its most zealous advocates are seldom heard from now, and some have so far revised their opinions as to declare they would not plant them as a gift. In conclusion, I think it safe to say that the practice of root-grafting the Quince on Apple is only admissible in case of rare or scarce varieties.

E. W.

The Peach Yellows.—A case is cited in *Orchard and Garden* where a Peach tree standing in rich ground showed this spring every symptom of the yellows. Early in July a quart of muriate of potash was forked into the soil about it with magical effect. New and healthy foliage began to appear, and within a fortnight after the application the tree appeared in good health. This corroborates the experience of many peach-growers in New Jersey, who have found potash, as recommended by Dr. Goessmann, a sovereign remedy for many trees apparently afflicted with the yellows. Indeed, so often has this cure been repeated, that many peach-growers in that state do not believe that there is any such disease. The only disease they fear is starvation. On the other hand, peach-growers in Michigan are thoroughly convinced that such a disease exists, and that it is incurable. Indeed, laws have been enacted to enforce the destruction of affected trees, and thus prevent the spread of what is considered a most dangerous contagion.

Perhaps, under the circumstances, it would be well to refrain from enforcing the law to exterminate diseased trees until the potash cure had been tried. Admitting the existence of a genuine disease, it is not impossible that a lack of some constituent in the soil may enfeeble Peach trees, and give them the same appearance as that of trees affected by the disease. If an application of kainit or other form of potash will save the trees and renew their vigor when in this condition, it would be well to try the potash remedy before the more heroic one is resorted to.

S.

Plant Notes.

Nymphaea tuberosa.

THE figure of this handsome Water Lily which appears in the present issue is the first which has been published, unless the doubtful *N. reniformis* of De Candolle, figured by Delessert in his "*Icones Selectae*" (ii, 3, t. 5), is really the same plant. *N. tuberosa* was first made known by Paine in his "Catalogue of the Plants of Oneida County, New York," published in 1865. It may be distinguished from the common species of eastern North America (*N. odorata*), with which, doubtlessly, it is often confounded, by the thicker root-stock (see Fig. 58), bearing spontaneously-detaching and often compound tubers, by the much larger and more prominently veined leaves, green on both faces, and which, when fully grown, are

often raised above the surface of the water on the stout petioles; and by the much larger flowers, four to ten inches in diameter when expanded, the petals proportionally broader and blunter than in *N. odorata*. The flowers are scentless, or almost so. The fruit is depressed-globular, with few globular-ovoid seeds, barely enclosed in the aril at maturity.

N. tuberosa is the common Water Lily of Lake Champlain and of the waters which flow into it. It has recently been detected in a very depauperate form near Trenton, New Jersey, by Dr. Abbott, and it occurs at Meadville, in Pennsylvania. These are the only places where it has been noticed near the Atlantic sea-board, but it is said to be common from western New York, west and south, but its distribution is not yet at all well known. It is one of the most beautiful of all the Nymphæas, and by far the most beautiful of those which can be grown in the Northern States without artificial heat, equaling *N. odorata* in the delicacy of its petals, although the flowers lack the delicious fragrance of that species.

N. tuberosa is easily cultivated; indeed, when once established, it increases so rapidly by means of the detaching tubers and by seed, that it is sometimes difficult to keep it within reasonable bounds.

The flowers (on cultivated plants) open about eight o'clock in the morning, and close in pleasant weather between two and three o'clock in the afternoon. They open twice or sometimes three times if the weather is overcast.

C. S. S.

The Forest.

Forestry in California.—I.

THE first business thought of a practical person in looking at a forest is, What are its products worth—that is, what can be made out of it? For the products of the forest enter into the life of every one. The varnish of the artist, the rubber, the gums, the resins of commerce, the barks of the tanner, the corks of the vintner, the handles of our tools, hoes, plows, etc., our dye-stuffs, our wagons, the ties and cars of our railroads, fences and telegraph-poles, furniture, wharves, boats, ships, and in America, even the houses we live in, are largely the product of the forest. Few people appreciate what the annual drain on our forests is; even such small things as matches consume great amounts of lumber every year; charcoal and fuel are a great drain on our forests; even coal is but a fossilized form of wood. Nuts, fruits and medicines, such as cocaine, quinine, etc., cannot be overlooked. When we thus consider the products of the forest, it will not be a surprise to learn that these were estimated in the United States for the year 1880 at \$800,000,000. The last government statistics at my command show some of our principal crops to have been:

Wheat,	\$474,291,850
Cotton,	280,266,242
Gold and Silver,	74,400,000
Coal,	94,500,000
Iron Ore,	20,470,000

It will thus be seen that the economic value of our forest products is nearly double that of wheat, more than ten times that of gold and silver, and forty times that of iron ore. The census, the agricultural reports, the recorded observations of intelligent men, as well as the individual experience of every one who has by travel become acquainted with the country, show that the consumption and destruction of our forests now so far outruns their reproductive capacity, that at the present rate in a few years we shall have no forests at all, and their vast crop, valued at \$800,000,000 a year, must disappear from our census books. We are eating into our capital and providing for no renewal of it. It is not alone the good lumber and firewood taken that we must calculate on, but the waste that accompanies it, and the destruction annually caused by fire. These the best authorities state to be even greater than the drains of commerce.

Forest fires destroy every year millions of this, the people's property, and blacken and mar the landscape. Besides, the lumbermen, in the prosecution of their business, waste fully as much timber as they use. In my visits to Mendocino County, and other centres of lumbering activity in this state, I have seen left to rot or burn large portions of the trees felled,

and again and again I have seen magnificent trees felled and left untouched because they did not fall right, or for some other trifling reason. In this way much lumber is wasted and firewood enough is annually destroyed to supply the whole of California for years.

Besides the waste, this *débris* in the oft-recurring fires makes an intense flame and heat, endangering all neighboring forests and destroying, often entirely, and always much of the woods they traverse; and also the humus in and above the earth. It may be well to say just here to those having lands to clear that it has now been demonstrated thoroughly that burning over land destroys the best part of the soil, and thus permanently injures its producing capacity. The hotter the fire, the deeper it destroys the soil. Experiments in Canada show that a hundred years of repose and forest action will often not re-establish the strength and fertility of the soil passed over by hot fires.

Besides the regular lumbermen, who operate on a large scale, there are numbers of individuals engaged in making shakes, etc., who use only selected trees, chiefly the Sugar Pine, which in this state reaches a great size, is very valuable, but does not readily reproduce itself. To be used advantageously for this purpose, these trees must be in certain conditions, which can only be told after they are felled. Thus thousands of trees, and of the very best, are annually felled and found unsuitable, and left to rot. At the best these men only use about twenty feet of the magnificent trees they cut, the rest being waste. The Sugar Pine is fast disappearing. The tan-bark men also destroy great numbers of trees, taking only the bark. I have seen in this state, in one place, woodmen destroying trees, cutting off only the branches for firewood, and leaving the trunk and bark unused. In other places the lumbermen leave the branches and firewood, and taking only the trunks; again, tan-bark men leave the entire trees, using only the bark. It may not be a crime to allow such unnecessary waste, but it is unmitigated folly to be thus throwing right and left a property that brings us in \$800,000,000 a year.

The forests are also much injured by sheep and goats that are driven into them for a few weeks' pasturage; these destroy the young trees and pack the ground so that it cannot so well receive and hold moisture. Besides this, the shepherds often deliberately set fires to open the country, or, as they say, to improve the pasture, thus destroying, in one season, more lumber, fire-wood, etc., than the value of all the sheep and goats and their products that have or ever will visit the scant mountain pastures.

Every considerable government of Europe now has its forestry department. Every one of them gives a net revenue. The system pursued is nearly the same in all. By it the forests are preserved and increased in area; at the same time the maximum of fire-wood and lumber consistent with this preservation is taken out; no waste is allowed.

The revenues from these departments show that a large, properly managed forest is a source of income. Saxony has a net annual income of \$3.25 from each acre in her total forest area. Alsace-Lorraine about the same. British India, although a new convert and under heavy expenses, had, according to the last returns in my hands, a net income from her forest lands of over one million dollars.

All the European governments, save England, which is exceptionally situated, have forest departments served by men instructed in forest schools, some of which are celebrated, such as those at Hanover, Aschaffenberg, Minden and Nancy, each department giving more or less net revenue. In Austria, Italy and France considerable works in forest planting, from which little or no direct revenue can be expected, are being done.

Such desolate places as the Karst, in Austria, and the Landes, in France, are thus being reclaimed. Trees are also being extensively planted on the water-sheds of rivers and torrents; in the first case the object is to re-establish regularity of flow in the streams, and in the second by preventing the rapid delivery of heavy rains from bare surfaces, to reduce and eventually end the destructive action of rivers which are either beds of bowlders or glittering wastes of sand, or rushing torrents of turbulent water, charged with mountain *débris* and carrying destruction in their course to the valley lands. These works of the foresters are productive to the nation, but show no revenue to their department, a fact that must be taken into consideration in the economic management of forests. But some of these works have become remunerative. The Pine plantations on the south-west coast of France, about Arcachon, to reclaim the desolate Landes, are of these. In that section the sand dunes of the coast were rapidly advancing on the interior in hills over 200 feet high; fields, houses,

villages and even church steeples were entirely buried out of sight. Major F. Bailey, R.E., in a recent trip to the Landes, speaks of his guide tying his horse to the projecting point of one of these covered church steeples.

The planting of these forests near the coast, together with the preliminary work necessary to establish their growth and stop the rolling sands, cost the French government about \$40 per acre. Tracts in these forests are now rented for five years, with the privilege of cutting selected trees and tapping others for resin, at a price equaling about \$70 per acre. It will thus be seen that under even adverse circumstances a scientific forest management, designed for protection to a country rather than for direct profit, may be made remunerative.

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—The article, with illustration, in GARDEN AND FOREST, July 11th, assumes, not without reason, that *Rosa laevigata* is a foreign species, introduced and naturalized through a large part of the South Atlantic and Gulf States. Nevertheless, it seems to me that, in the absence of positive proof of its introduction, it is still a question whether Michaux was not correct in considering it a native. The plant was known as the Cherokee Rose at least a century ago, and this fact seems to indicate that it found its way into the white settlements nearer the coast from the Cherokee country in upper Georgia and the Carolinas. More than fifty years it was known in cultivation at Salem, North Carolina, and vicinity, where the evergreen foliage sometimes suffered from the severity of the winters. The tradition there was that it had been introduced from the "Cherokee Country," having been brought by Moravian missionaries of Salem, whose stations were in the region which has since become famous through the battles fought in the late war—Mission Ridge, Lookout Mountain, etc.

Elliott, in his "Botany of South Carolina and Georgia," published in 1821, speaks of it (as stated in the article referred to) as having been cultivated in the gardens of Georgia for upwards of forty years, therefore as early as in the years of the Revolutionary War. If introduced from abroad, it must have been when the settlements of Georgia had scarcely reached the upper country—Savannah having been founded in 1733—and it is difficult to conceive that it should have been designated from the first as the *Cherokee* Rose if it reached the country through the lower settlements, and that it should have become so common and well-established about one hundred years ago that the careful and experienced observer, Michaux, "mistook it for a native plant." Was he not right?

On referring to Grisebach's "Flora of the British West Indian Islands," I find *Rosa laevigata* given (on the authority of an old friend of mine) as "naturalized in Jamaica," and he adds, "introduced from China and Japan." The question arises, Was it not rather introduced in Colonial times from Charleston or Savannah, when intercourse and trade were frequent? Although the plant flourishes luxuriantly in the mountain regions, it exhibits unmistakable evidences of its introduction from abroad. More than fifty years ago it could be met with near houses, and usually covering stone-walls. It was not regarded as a rare plant or of recent introduction, the persons inquired of usually being ignorant of the way it got there. In the year 1848, passing a deserted coffee-plantation in the interior of the island, among the mountains, I came upon what had evidently at one time been a hedge of Cherokee Rose. The plants had spread and flourished until they covered a space twenty feet broad, and formed a mass higher than a man's head on horseback, probably outdoing those in the illustration by Dr. Lanborn. The shining foliage and the hundreds of pure white Roses formed a beautiful sight—all the more striking and surprising because (with the exception of *Rubus Jamaicensis*) it was the only representative of the order Rosaceæ I had met with in a flourishing and apparently naturalized condition. Trees that had grown up spontaneously, and the deserted and decayed buildings, indicated that cultivation had been abandoned for many years—probably not less than twenty—but there was the long, straight line, indicating unmistakably the original hedge. And it was this hedge idea (the use to which the species is generally put in the Southern States) which seemed to me, at the time, a reason for thinking that the plant had been introduced direct from our own country, and not from England, whence it must have come, if not from the United States.

If, in the island of Jamaica, under the most favorable conditions, and after many years, it is unmistakably evident that the plant was introduced, is it likely that in Georgia, where

the plant, if introduced, could not possibly have been an inhabitant longer than I found it in Jamaica, it should have outgrown the evidences of its introduction so as to deceive Michaux into regarding it as a native?

Among flowering plants, as you know, there are instances of geographical distribution quite as remarkable. Looking at Grisebach's work the other day, I observed, among the Orchideæ, *Phajus grandifolius*, unmistakably a native of the mountainous parts of Jamaica, also "a native of tropical Asia to Hongkong." And taking up Gray's Manual, to determine, for a young friend, the perennial herb *Phryma leptostachya*, common in our woods, we found the remark: "Also in the Himalayan Mountains."

On the whole, therefore, is it not still to be proved that *Rosa laevigata* is not a native of the south-eastern United States, as well as of the region corresponding in climate in eastern Asia?

Hope, Indiana.

F. R. Holland.

[Botanists have long held the opinion that the Cherokee Rose is not an American plant. Although thoroughly naturalized in some parts of the Southern States, it is not found remote from actual or ancient settlements, and the fact that it does not occur at all in the upper country, once the home of the Cherokee Nation, must dispel the belief that these Indians introduced it to the coast settlements. The fact that it has not become as firmly established in Jamaica as in the Southern States would be accounted for by the difference in the climate of these two regions, that of Jamaica even at high elevations above the sea being too hot for a Chinese plant. Is it not possible that a ship trading from China to Charleston, or some other American port, may have brought this Rose direct to this country, and that it may then have been taken to Jamaica from this country? Or it may have been introduced first into Jamaica and then brought to this country. *Rosa laevigata* seems to have been cultivated in England, however, as early as 1759.—ED.]

Recent Publications.

Flora of the Hawaiian Islands: A description of their Phanerogams and Vascular Cryptogams, by Wm. Hillebrand, M.D. New York: B. Westermann & Co.—This is a description in English of the plants of the Sandwich Islands, written by a German physician who resided on the islands during a period of twenty years, which were principally devoted to a critical study of their flora, although, having mastered the language, he practiced medicine in Honolulu with great success, holding besides several important offices under the Crown. The Hawaiian Islands are more remote from any continent than any group of similar extent; the character of their flora, therefore, and its relationship with other insular and with continental floras, are matters of extreme interest. As might be expected, the flora of these islands, in which "a single day's march will carry the traveler from the tropical heat of the coast to the region of perpetual snow," or where, by crossing an island, one may go from a climate with a rainfall of 180 inches to one of 30 inches, is rich in genera; and from their isolation especially rich in endemic species. Dr. Hillebrand describes 844 species of flowering plants, distributed in 335 genera, and 155 vascular cryptogams in 30 genera, making 999 species in 365 genera. Not less than 115 species, weeds in cultivation, escapes from gardens and accidental arrivals on the shores of the islands, have become fully established since these islands were discovered, and 24 species are supposed to have been introduced prior to the coming of Europeans. Eight hundred and sixty species, therefore, divided among 265 genera, or 3.25 species to one genus, are indigenous to the islands. Of these 860 species not less than 653 or 75.93 per cent. are endemic, 250 of these species belonging to 40 endemic genera. In the Hawaiian Flora are forms whose relationship can be traced to the plants of the South American continent, to those of Mexico and Australia, and to Polynesia. The shrubby *Lobeliaceæ*, of which there are four or five endemic genera, with fifty species, some of which are trees of considerable size, forming perhaps the most interesting and remarkable group of plants in this flora, have their nearest relatives in the South American Andes. The Australian flora is represented by Acacias and *Metrosideros*, the former quite Australian in their peculiar structure; while *Cytandra*, a Polynesian type, is represented on these islands by thirty endemic species. The most generally

distributed and the most valuable timber trees of the islands, although now fast disappearing of merchantable size, are *Metrosideros polymorpha* and *Acacia Koa*. The former, which is the most generally prevailing tree on the islands, between 1,500 and 6,000 feet elevation, produces a very hard wood, highly esteemed for fuel, and sometimes used in building. The *Acacia*, Dr. Hillebrand considers the most valuable tree on the islands. The wood makes excellent fuel, and is much used for building and for cabinet work, for which its beautiful grain well adapts it. It was from the trunks of this tree that the natives cut their great war-canoes. *Conifera* have no representative in this flora, a fact much less remarkable than that, besides the Coconut, there is but one genus of Palms (*Pritchardia*, a Polynesian genus of three species) with two species. Some interesting plants in the Hawaiian flora are a Dock (*Rumex gigantea*), with a woody base, which grows up among the trees of the forest to a height of forty feet; a Geranium, with a stout trunk, twelve feet high, and the shrubby or arborescent members of the Lobelia family, with fragrant flowers. Dr. Hillebrand, who left the islands as early as 1871, did not, unfortunately, live to see his book passed through the press, and his notes upon the distribution of species and the various aspects of the vegetation of this group of islands are left in a fragmentary and unfinished condition; and it is to his son, Dr. W. F. Hillebrand, of the Smithsonian Institute, that the last cares of publication have descended.

The "Outlines of Botany," written by Mr. Bentham, to precede the British and Colonial Floras, prepared in the herbarium of the Royal Gardens at Kew, is joined to the present work.

Periodical Literature.

Chambers' Journal for July contains an interesting article on "The Kola Nut," which is an abstract of an address delivered before the Fiji Agricultural Association, combined with extracts from Mr. T. Christy's book on "New Commercial Plants and Drugs." The tree which bears this nut is the *Sterculia acuminata*, a native of the west coast of Africa, between Sierra Leone and the Congo, and cultivated in the East and West Indies. It begins to bear in the fourth or fifth year after planting, but does not produce a full crop until it is ten years old, when its yield averages 120 pounds of seed. Two collections of seed are annually made, one in the autumn and one in the spring months. "When the fruit is ripe it takes a brownish-yellow color, and in this condition dehiscence of the capsule commences along the ventral suture, exposing red and white seeds in the same shell. . . . As many as five ripe carpels may result from a single flower and these may each contain from five to fifteen seeds; but in some cases carpels are found containing only a single seed. The seeds removed from their envelope weigh . . . from five to twenty-five or twenty-eight grammes. The epidermis is the principal site of the coloring matter, and beneath it is a tissue consisting of a mass of cells gorged with large starch granules, comparable to potato starch. It is in these cells that the alkaloids, caffeine and theobromine, are found in the free state."

In preparing the seeds for transportation, they are removed from their husks, freed of their skins, carefully picked over, and packed in large bark baskets lined and covered with leaves of Bol (*Sterculia heterophylla*). If these leaves are constantly kept moist and the seeds are picked over and re-packed about once a month, they may be kept in good condition for long periods, and are, in fact, thus transported from near Gambia and Goree to the Soudan or Timbuctoo, and thence to Tripoli or Morocco.

The value of the Kola nut is great, both as an article of food and as a medicine. It contains five times as much caffeine as tea and more even than coffee, and is a remedy for nervous complaints, heart troubles and digestive derangements. Prepared as chocolate, with sugar and vanilla, it is ten times more nutritious than cocoa, and the use now made of it in English hospitals confirms the verdict of the natives of west Africa, who are accustomed to depend largely upon it for subsistence in long caravan journeys. In the interior of the country it is so highly prized, that a dry powder formed from it is purchased by an equal weight of gold dust. Its uses here are not simply dietary, but, so to say, social. An interchange of white Kola nuts between rival chieftains means peace; of red ones, a challenge. Proposals of marriage are made with white Kola nuts, are accepted in the same manner, and refused with red ones. Oaths are administered by a person stretching out his hand over Kola nuts while he swears, and eating them immediately afterwards.

The Kola tree grows in low, damp or even marshy ground, and will flourish from the sea level up to an elevation of a thousand feet. Its cultivation is strongly recommended by Mr. Christy, as it is more easily raised than the Cocoa plant, and as the superior nutritive qualities of its fruit become better known, the demand for it rapidly increases.

Naudin, in the *Manuel de l'Acclimiteur*, speaking of the properties of the Kola, calls attention to the fact that it is often confounded with a false Kola called *Kola mâle*, or "Bitter Kola," which is produced by a shrub of the *Guttifera* (*Garcinea Kola*), which grows in the same regions. The mistake is often made by the natives, although the properties of the two nuts are quite different.

Recent Plant Portraits.

BEGONIA GERANIODES, *Bulletino de la R. Societa Toscana di Orticultura*, July; a white flowered South African species, of botanical rather than of horticultural interest.

SPATHOGLOTTIS AUREA, *Gardeners' Chronicle*, July 28th; from the plant which, under the name of *Spathoglottis Kimballiana*, recently received a certificate from the Royal Horticultural Society of London. "The cultural treatment it requires is much the same as that afforded to the genus *Bletia*, the material used in potting being turfy, yellow loam, peat and sphagnum moss, with a little silver sand added—the *Spathoglottis* being terrestrial plants. *Spathoglottis aurea* was first sold at Stevens' rooms by its importers, F. Sander & Co., in September, 1886, with a glowing, but it must be observed, an accurate description. It forms an admirable companion to the beautiful *Spathoglottis angustorum*, which is the same in general appearance, but white and rose, and the rather smaller bright Rose, *S. plicatum*."

CLEMATIS COCCINEA, *Revue Horticole*, August 1st; an admirable figure of this now well known Texas species.

Botanical Magazine, May, TREVESIA PALMATA, 7008; "one of the most conspicuous features of the tropical jungles of the Central and Eastern Himalaya, Assam, and the hot, humid regions of the Khasia Mountains and Chittagong, where its slender stem, crowned with terminal whorls of spreading, broad, fan-shaped, long-petioled leaves, rising above the herbaceous forest undergrowth, at once attracts attention." The greenish white flowers, in long peduncled panicles, are not showy, and emit a heavy, disagreeable odor.

ECHINOCACTUS HASELBERGII, t. 7009; a dwarf species of unknown origin, three inches in diameter, covered with slender spines, and producing small orange-red flowers.

SARCOCHILUS HARTMANNI, t. 7010; a delicate Orchid from the mountain forests of Queensland, with white flowers three-quarters of an inch in diameter, the sub-similar sepals and petals handsomely blotched with red near their base.

ARISTOLOCHIA WESTLANDI, t. 7011; a large-flowered species, native of southern China.

NARCISSUS PSEUDO-NARCISSUS, var. JOHNSTONI, t. 7012; a native of the neighborhood of Oporto.

HEUCHERA SANGUINEA, *Gardeners' Chronicle*, August 4th. STYRAX OBASSIA, *Gardeners' Chronicle*, August 4th; a well known and hardy Japanese species, and, so far as the foliage is concerned, the hardiest of the genus.

NEPHRODIUM TUERCKHEIMII, *Botanical Gazette*, t. II, July, 1888; a native of Guatemala.

CYRTOPODIUM SAINTLEGERIANUM, *Gardeners' Chronicle*, August 18th; "this may be regarded as the showiest form of the variable *C. punctatum*, from which it does not seem to differ in botanical features; it is, however, far handsomer than the general run of the species, and the bracts, which are highly developed, are barred and blotched with chestnut-red of the same bright hue as that seen on the yellow flower-segments."

STUARTIA PSEUDO-CAMELLIA, *Gardeners' Chronicle*, August 18th.

PROLIFEROUS STRAWBERRY, with flowers produced from the side, *Gardeners' Chronicle*, August 18th; an interesting figure as illustrating the true character of the strawberry, which is not a berry, as is popularly supposed, and not even a fruit, but the swollen and enlarged end of the flower stalk, the true fruit of the strawberry being the small dry stones, improperly called seeds. That the strawberry is really an enlarged stem the buds developed from the side of the specimen figured very clearly show. One of these is so perfectly organized that it has leaves, the commencement of a runner and a perfectly developed terminal flower.

SALIX PHYLICOIDES, *Botanical Gazette*, July, 1888; an Alaskan and East Siberian species of Willow,

Notes.

Apples are now being shipped from California to Australia.

The Japanese *Stuartia*, which is just now attracting attention in England, was exhibited in this city by Mr. Samuel B. Parsons as long ago as 1877. It was introduced into this country some time before by Mr. Thomas Hogg, to whom we are indebted for so many Japanese plants.

At the great exhibition of the Peninsula Horticultural Society at Wilmington, several fruit-growers made most attractive displays of the fruits of the entire season, the earlier ones being preserved by cold storage. Of Peaches, for example, the whole list was represented, from Amsden's June down to the very latest. The specimens were large and finely colored.

Mr. Thomas H. Douglas, Head Forester of the California State Forestry Commission, writes that *Catalpa speciosa* is very promising as a timber tree in San Diego County. The trees do well on sandy hills without irrigation, outgrowing even the Eucalyptus on such soil. *Catalpa bignonioides* is distinctly inferior wherever compared with *C. speciosa* in Southern California.

About two thousand acres of land are now devoted to Strawberry culture in the neighborhood of Centralia, Illinois, and from this point as many as 190 car-loads, or 2,097,600 quarts of berries have been shipped in a season of twenty days. The largest Strawberry field contains thirty acres, but the smaller ones pay better in proportion, and nearly every back yard in Centralia brings in pocket money.

Mr. Wm. Goldring, our London correspondent, has lately been commissioned by the Gaikwar of Baroda, one of the native princes of India, to design and carry out some important landscape works, consisting of gardens and pleasure grounds around his palaces and some public parks and gardens in other parts of his dominions. Mr. Goldring will spend the winter months for the next three years in India, and, in the course of his studies, will visit many of the notable gardens of that country. Descriptions of these gardens, together with notes on Indian horticulture and forestry, will be prepared by Mr. Goldring from time to time for GARDEN AND FOREST.

There now seems to be little question that an efficacious remedy for the Black Rot of Grapes has been found in certain preparations of copper sulphate. The experiments carried on under the direction of Professor F. Lamson Scribner, for the Department of Agriculture, have been characterized by great care and thoroughness, and if the results hoped for are realized, they will prove of incalculable value to all Grape-growers where the Black Rot and Mildew have been destructive. If this treatment will enable us to grow the varieties of *Vitis vinifera*, which has been impossible heretofore on account of these diseases, Professor Scribner's work will have a still greater practical importance.

Two years ago Mr. Carman, of the *Rural New Yorker*, succeeded in fertilizing the pistils of the Raspberry with pollen from the Blackberry, and planted the seeds which resulted from this union. Of the eighteen hybrids secured, three have fruited this year. One of them is a vigorous plant with large leaves, nearly thornless canes, and, to all appearance, a Raspberry with yellow fruit of medium size and of the quality of the Caroline. The second bears a red berry resembling the Hansell in size, color and quality. The third plant resembles a Blackberry, with flowers like those of a Raspberry, and bearing jet black berries with a Raspberry flavor. All the plants bear some imperfect berries, and, judging from their behavior this year, do not promise to be of much economical value.

The meeting of the Brooklyn Park Commissioners last week was invested with a peculiar interest from the fact that the advisability of engaging Messrs. Olmsted & Vaux as Landscape Architects Advisory came up for discussion. A letter from these gentlemen was read stating the conditions under which they are prepared to give their services to the Board in that capacity. It was urged by those who favored the measure that inasmuch as Messrs. Olmsted & Vaux were the original designers of Prospect Park, it was fitting that when \$200,000 are to be expended for its permanent improvement, these artists should be consulted as to the development of the plan. Dr. Storrs expressed the views of the Commissioners who appreciate the value of special training

when he said that they clearly needed the counsel and advice of men who have given their lives to the study of this kind of work. The matter was laid over until a future meeting, when a definite form of contract will be presented for acceptance. Some difference of opinion was manifested, and the final decision of the Board will be awaited with interest.

The current number of the *Art Review* contains an article by Mr. George Forbes, called "The Picturesque Adirondacks," which is well adapted to convince readers who have never visited this region of its great value to the people as a sanitarium in the widest sense of the word—as a place of recuperation and refreshment for body, mind and soul. As his title indicates, Mr. Forbes's aim is to disclose the beauty of the Adirondack country rather than its economic value. It is not his purpose, he explains, to inquire into the matter of its "prodigious importance as the ultimate source and reservoir of the water-supply of the State, and into the corollary question of its Forestry-laws." Yet he cannot refrain from asking whether, even if "its æsthetic charms" were alone in question, they do not "demand a legislative enactment that shall make the entire section a State Park, as free to the people of this and other States as are the Niagara Falls Reservation and the Yellowstone National Park?"

The *Weekly Press* (Philadelphia) has been collecting through its correspondents some interesting data as to big trees in various parts of the country, and measurements of remarkable trees in fourteen states are published in the number for August 22d. Among these are a Live Oak in Marion County, Florida, with a trunk circumference of thirty-one feet, and a spread of branches of nearly 139 feet; a Sugar Maple in Bradford County, Pennsylvania, with a girth of sixteen feet, and branches spreading eighty-three feet; an Elm in Shinnston, West Virginia, with a girth of twenty-seven feet three inches, a spread of branches of 123 feet, and a total height of 110 feet; a Chestnut in Lancaster County, Pennsylvania, with a circumference of twenty-five feet three inches, and branches spreading eighty-eight feet; a sycamore in Wabash County, Illinois, with a girth of twenty-eight feet, and a Sassafras at Johnsville, Pennsylvania, with a circumference of thirteen feet six inches three feet from the ground, a spread of branches of thirty-five feet, and a total height of forty-six feet.

At the Sixtieth Annual Exhibition of the Massachusetts Horticultural Society last week the display of out-door flowers was not so large as usual, owing to the protracted rains, but the quality of those shown was of the best, and the arrangement of the cut flowers and green-house plants was better than usual. Fruits were exhibited in great profusion, although Apples and Pears were not so abundant as in former years. They were exceptionally free, however, from fungus and blight. Vegetables were shown in great abundance and variety and not a single poor specimen was seen, and the fifty dishes of perfect Tomatoes placed together presented a mass of color unequalled in the hall. Among the ornamental plants, the collection of Orchids and green-house plants contributed by Messrs. Pitcher and Manda, of Short Hills, was noteworthy. A magnificent specimen *Latania Borbonica* from Mrs. Francis B. Hayes was conspicuous in the upper hall. Mr. L. W. Goodell made an attractive exhibit of *Nymphæas* and other water plants, and a fine specimen of *Nepenthes* with twenty pitchers was sent by George McWilliam, gardener to Mrs. J. Lasell. A great group of green-house plants from Mr. Nathaniel T. Kidder contained the six specimens for which the prize was given to his gardener, William J. Martin. Thomas Clark, gardener to Mr. Brooks, showed, among other fine plants, a *Cibotium princeps* which took the first prize for a Tree Fern, and A. J. Wheeler, gardener to Mr. J. H. White, contributed an admirable collection, including an *Acalypha* of remarkable color. A collection of native flowers from Mrs. P. D. Richards was one of the most interesting features of the display, and Mr. James F. C. Hyde sent thirty-eight varieties of cultivated native Asters, two of them cross-bred seedlings, and a large and finely colored *Gentiana Andrewsii*, which he had cultivated. An instructive collection of plants, ornamental and useful, came from the Harvard Botanical Gardens, including specimens of the Olive, Logwood, Coffee, Pepper, Papyrus, Cinnamon, Mahogany and many more. The value of this collection was greatly increased by the complete and accurate labeling of the plants. Among cut flowers, the new Rose, Madame Watteville, was shown by Norton Brothers, some of the best new Cannas and tuberous-rooted Begonias by Edwin Fewkes & Son, and well-grown Dahlias by Edwin Sheppard, John Parker and George S. Tuttle.

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The Artistic Aspects of Trees:—IV.

FORM, texture and color—these we have noted as the three qualities to be considered when trees are studied for their artistic value.

If, in ornamental planting, we used only the materials which nature supplies in the neighborhood of our homes, no one of these qualities would seem of more interest in the planter's eye than the others, or would offer him more chances of making mistakes. But, as a result of the efforts of generations in introducing exotic species of trees and in perpetuating casual natural eccentricities as well established varieties, color has been brought into greater relative prominence in the nursery than it assumes in nature's workshop. The planter is therefore more apt to be struck by varieties of color than by those of form and texture; and as a rule thinks more of the effects which he can produce with them, and commits with them his most frequent and conspicuous mistakes. If a true artist could always be employed when a work of landscape gardening is in question, then the development of our numerous and striking nursery varieties of color—which include tones of purple, red, blue, white, and especially yellow in a score of different degrees, and many striped and mottled effects as well—might be counted wholly fortunate; for, of course, the wider the range of an artist's palette, the more numerous will be the kinds of beauty he can produce. But color is the most difficult of qualities to manage, the most revengeful when managed wrongly; and, in the hand of the ordinary planters the varied material of to-day means merely a greater confusion of tints, a more painful degree of unrest, spottiness and ugliness, than would have been achieved had the materials from the neighboring woods been adhered to. Too often, in small grounds especially, it seems as though the aim had been to do away as far as possible with medium green tones and to set upon a carpet of vivid emerald turf as many trees of strong eccentric hue as could be collected. Even when the general tone of the landscape is pretty well preserved and bright or variegated trees and shrubs are used simply as accents here and there, too little thought is given to placing them where they will be emphatic yet not disturbing, too little to the

question of their beauty as distinct from their mere novelty or eccentricity. As a rule it is better to avoid striking colors altogether and keep to the quiet medium tones of green. These offer variety enough to satisfy a cultivated eye in the majority of cases; and if an emphatic note is really needed, it can be supplied, where the general effect is softly harmonious, by means of something less brilliant than a Golden Poplar or a Purple Beech. Such trees as these have their place in gardening art; but an amateur's eye is hardly the one which can be trusted to find it. For the amateur, in short, the safest course is the best one to follow, although it may not be the one which an artist will always follow in his search for the highest and most individual kinds of beauty. If a dull tree stands where a bright one would have produced a better effect, we may feel that a chance has been missed. But if a bright one stands where harmony required a dull one, then we feel that an actual sin against good taste has been committed.

The art of the gardener has likewise greatly increased variety in the forms and in the textures of trees, giving us pyramidal and weeping shapes, and finely cut or fringed foliage, in a perpetually increasing flood of "novelties." Here again the amateur is apt to be seduced into thinking that novelty means excellence, that eccentricity means charm; is apt to plant what he selects without regard to harmony of general effect, and to select in the interests of curiosity rather than of a love for genuine beauty. And here again it may be said that the safest course is the wisest one to follow. Normal shapes can hardly be so distressing, however they may be combined, as abnormal ones are sure to be if there is the slightest error in their combination.

Of form it may, furthermore, be said that a tree is not well understood until it is understood in all the stages of its growth. The typical shape of a young tree often differs very greatly from the typical shape of the same tree at maturity, and this again from its typical shape in old age; and, in planting, regard must be paid to the question whether an immediate effect or a long-postponed effect ought to be most considered. For example, a tree set in isolation on a lawn in full view from the house ought to be beautiful in youth and at the same time give promise of beauty (perhaps of a different kind but still appropriate) in later years; whereas in planting a belt or wood in the distance, the principal trees should be so chosen that they will look better and better the older they grow, while present effect may be chiefly considered in others which are destined to be cut as development progresses.

Texture varies less with the passage of years than form. Color is practically persistent year after year, but varies from month to month; and this fact should also be borne in mind. There are some trees, like the Yellow-wood, for instance, which are of a medium tint in the middle of summer, but of a yellowish green in spring, and it is unwise to place them where during a few weeks they will not look well, even if later on they assume a harmonious hue. Autumn effects should also be more carefully considered than they are; but to speak of the possibilities which are open to an intelligent planter in this direction would require a long chapter instead of an incidental paragraph.

Large Palms and other tropical plants grown in tubs or large pots are now often used in this country for the decoration of the lawns of country places or of some of the fashionable cemeteries, where costly glass-houses are maintained on purpose to store these plants in winter. No system of garden-decoration is more expensive, while few of the devices of modern gardening are more displeasing or unsatisfactory in their results. Palms, with very few exceptions, when placed out-of-doors in this climate soon become shabby; the foliage is torn and injured by the slightest storm, and having been produced in a damp and shaded atmosphere, soon turns yellow when exposed to the full blaze of the sun. But the most perfect specimen looks out of place on one of our northern lawns. It injures

the appearance of the trees and shrubs with which it is thus brought in contact, while these quite destroy the beauties of the Palm. Contrast of this sort is not beauty, and the result must always be unfortunate. Such plants have no place in the cemetery; and the money they cost could be directed with greater advantage in caring for hardy trees, and for the grass, which is too often neglected in such places. In private gardens they are appropriate and splendid objects for the summer-decoration of protected terraces and piazzas, as their graceful lines harmonize always when brought into close connection with architecture; but the true way to enjoy Palms and many other plants as well in this country is in a summer conservatory or tent, which can be spread over a terrace or a portion of the lawn in immediate connection with the house. Such a tent can be made to supplement the house in a delightful manner, forming an out-door apartment in which Palms and other foliage plants will thrive, and in which many flowers show their greatest beauty. Such a tent can be made attractive here during five months, and in such tents the tropical plants which are now allowed to disfigure, during the summer, many a fair scene should be gathered for their own and for their owners' good. But incongruous and out of place as Palms look in an American landscape, the effect produced by planting Agaves, almost universally called Aloes here, upon the turf of a lawn, is even worse; and when a number of these plants are packed close together in a circular bed the effect is grotesque beyond description. These, of all plants, are the most architectural in outline. Naturally they grow in a country and in situations so dry that there is never a vestige of grass near them. Standing out among the dry, bare, sun-scorched rocks of the Mexican mountains, they are often beautiful objects, filling the traveler with amazement and delight; but an Agave growing out of a trimly-mown lawn of grass is something which the imagination of a person who had only seen these plants as nature displays them could never picture. But they have their use in our modern gardens. No other plant can so appropriately or handsomely decorate the balustrade of a terrace or the steps of a great building. Whenever they can be used directly in connection with buildings they are in the right place. No other plants which can be properly used in such situations can so well support the heat and drought which full exposure to the sun entails, and there are no plants which, when used in such situations, give such universal satisfaction. It is evident that the decoration of gardens can never attain to its greatest possibilities until plants are more generally studied than at present in their homes, and in special relation to their natural surroundings.

Central Park, Minneapolis.

WHAT is now Central Park, Minneapolis—a pleasure-ground for pedestrians only, of some thirty acres in extent, in one of the best residence quarters of the city and surrounded by costly houses—was, no longer than four years ago, a piece of low, undrained pasture land. On one side of this pasture was a pond-hole, perhaps a hundred feet in diameter, surrounded by a broad margin of bogs, and from this the water oozed through marshy ground, over which it was hardly possible to walk dry-shod at any season. Upon the area through which the pool found its outlet, as well as upon its borders, there was neither tree nor shrub until three years ago, when the park planting was begun, and the swift transformation which has been effected here can be partly understood from the illustration on page 379, which gives a view of a portion of this marsh as it now appears. The pool and bog were excavated to form a lake, four acres in extent, and some of the earth was used to construct in it an irregular island. In addition to the natural springs found here, an artesian well was sunk from which three hundred gallons of pure water are delivered every

minute, so that the lake is well supplied with living water. That no hint of artificiality appears, however, either in the island or the lake, can be well imagined from the natural treatment of the shores, as seen in the illustration.

The view is taken from a point on the lake-shore opposite to the lower extremity of the island, and looking through a narrow channel between the shores of the island and the lake, with the island on the left. Above the island the opposite shores of the lake approach each other until they are near enough together to be spanned by the bridge shown in the illustration, while the larger portion of the lake lies still beyond. The shrubs, which are massed so effectively on either shore, were taken from neighboring swamps and woods three years ago. Conspicuous among them is the Red-berried Elder, whose arching branches admirably fit it for a position on the border of the water. Among other shrubs which overhang the lake are Sumachs and Red-twigged Dogwoods, while further back are Snow-berries, Button-bushes and other wild shrubs. The tops of distant trees, which form a portion of the sky-line, are on the further shore of the lake. These trees were also taken from neighboring woods, and, although they were large specimens, they have been so well cared for that their growth, like that of the shrubbery, has been exceptionally strong. When it is considered that artificial lakes and islands are always counted difficult of construction if they are to be invested with any charm of naturalness, the success of this attempt will not be questioned, while the rapidity with which the artist's idea has grown into an interesting picture is certainly unusual.

This park was designed by Mr. H. W. S. Cleveland.

On a Sand Ridge in California.

ONE day, about the first of June, 1888, I wandered in search of wild grasses to the summit of one of the foot-hills of the Santa Cruz range of mountains, some six miles back from the coast. It was a sandy hill, seemingly barren, but rising out of the white earth were many plants, undoubtedly natives, in the full glow of summer growth. This ridge, and in fact most of these mountains, are composed of sandstone, shale, and diatomaceous earth—a stratified oceanic deposit. Here we find fragments of shells, bits of bones of marine mammalia, teeth of sharks, fragments of echinoderms, etc. In the shale, or "chalk rock," as it is commonly called, are immense quantities of a few species of diatoms, and spicules of sponges. There is enough lime, magnesia, and the like, to act as a slight cement in holding the particles together. Some of the "shale," however, has a flinty hardness, and looks much like flint. It contains some silex and aluminum.

There are numerous perennial springs of cold water among these hills. In some places there are bituminous oozings, and occasionally a mountain-spur of sandstone completely saturated with asphaltum. This material is used quite extensively now for covering the streets and sidewalks of our towns and cities. It answers an excellent purpose, because it is indestructible, and a good material to walk or drive over.

Wherever there are valleys or basins there are trees of all sizes, and many species, from the Manzanita, four or five feet high, to the tall Redwood, 100 to 200 feet high. Geologically all this region belongs to a comparatively recent period. The fossils are mostly of the same species as those now living in the Bay of Monterey.

Of the plants growing on this apparently barren sand ridge I might make a long list—much longer than would at first seem possible. Within fifty steps of where I stood on the summit of the little sand ridge I noted with my pencil about twenty-five species. I did not stoop to examine the smaller kinds.

I will mention a few of the most attractive. A species of *Ceanothus* (*C. cuneatus*), or "Lilac," as it is known in

California. It is a very pretty spreading shrub, six to eight feet high, with smooth, thick, reticulate-veined leaves, one-half to one inch long, often with a notch at the apex, darkish green above and glaucous underneath. The flowers are in globular clusters about one inch in diameter, white or pale blue, and fragrant. When in bloom it is a charming shrub as it grows on these hills. Another bush touching the Ceanothus is a Manzanita (*Arctostaphylos tomentosa*). It is an evergreen and exceedingly variable plant, no two being of the same color of foliage. Chameleon-like, it varies with season, locality and stages of growth. Its dark reddish trunk (most frequently in clusters) is always gracefully crooked and ornamental. In June the flowers have all disappeared, and the little berries, one-fourth to one-half inch in diameter (little apples, their name signifies in Spanish), green, red and brown in color, hang in pretty clusters among the old and new leaves.

In such places the California Poppy (*Eschscholtzia Californica*), is seldom wanting, and it was present here with its inimitable yellow flowers on long stems, which generally find support among the branches of some dwarf shrub, such as the Chamisal (*Adenostoma*).

I found here, also, a very pretty Cichoriaceous plant in full bloom (*Malacothrix obtusa*), with its radical leaves spreading on the clear sand, and scape-like, branching stems bearing beautiful yellow flowers, next in richness to the Poppy. I brought home some of these, which continued for two weeks to open out each day and close at night their pretty flowers.

Among the several grasses I will mention the one most prominent; a beautiful and stately Blue grass, *Poa tenuifolia* of Nuttall. It is beautiful because so unexpected and out of place in such a locality. Growing in bunches, two or three feet high, with numerous slender, often purplish leaves, it tempts one to try the experiment of planting a lawn, or making a Blue Grass farm on some of these sand ridges! More improbable things have been done; for instance, in Golden Gate Park, in San Francisco, where roving sand hills and Alaska winds have been tamed down to gentle slopes and genial breezes, by the aid of certain trees for wind-breaks, and a skillful selection of other plants adapted to the holding of the sand and staying the air currents.

At present our sand ridge only serves the slightly useful purposes of keeping pure the native plants, of storing up some heat from the sun during the day to temper the night breeze, and producing a few mouthfuls of forage for grazing cattle.

What its full capabilities are, must remain for future experiment. It is certain a vineyard can flourish there, for that has been demonstrated near by. Some day probably certain forest trees may grow on these sand slopes, to supply timber for future generations, to preserve and equalize the water supply, and to protect orchards and farm-lands from the too violent sweep of winds that sometimes blow from the north and west.

Santa Cruz, Cal., July, 1888.

C. L. Anderson.

Foreign Correspondence.

London Letter.

THERE was an abundance of flowers to-day, for the most part from the open air, at the meeting of the Royal Horticultural Society, and the unusually large number of first-class certificates awarded is proof of the excellence of the novelties. The chief feature of the exhibition was a magnificent display of Gladioli from the famous growers, Messrs. Kelway, of Langport, in Somersetshire. I do not know whether *Gladiolus Gandavensis* is grown much in America, though I imagine that they could be grown to perfection in your hot summers. If they are not, they should be, for there are few flowers that can surpass the splendor and the stateliness of a perfect *Gladiolus*, such

as James Kelway can produce. Of the 500 spikes displayed not one was under eighteen inches in length, and every one carried a score or more of expanded flowers and buds, every flower being three to even four inches across, as perfect in form as the most exacting florist could desire. The colors of these Gladioli have an extremely wide range, showing every gradation of tint, from the most glowing scarlets and crimsons through the most exquisite shades of pink to the purest of whites. Some are penciled, lined, flaked and blotched in the most subtle way, and all have their petals of wax-like texture, the crystalline cells of which sparkle on their surface like gems. This is not an overdrawn picture of what Kelway's Gladioli are to-day, and I thought, when admiring them this morning, how odd it is, not to say perverse, that flowers of such marvelous beauty should be neglected because their market value is not so great as that of Orchids and other expensive tropical flowers. Of the hundreds of spikes shown to-day the majority represented old varieties, but a large number of new seedlings were shown for certificates, and of these the Committee selected the following six sorts: Cebes, brilliant cherry-crimson, quite a new tint; Magas, white, delicately penciled with pink; Micon, upper segments blush white, flaked with pink, lower segments pale primrose-yellow, a distinct break in color; Accia, vivid scarlet, with lower segment white; Bullion, pale yellow, flaked delicately with carmine, and Mago, carmine-crimson, with white lower segment. All these have massive spikes and large flowers of perfect form. Others could have been chosen that worthily deserved a like award, but the principle is not to be too lavish with certificates. For the next two or three meetings Messrs. Kelway will show an array of Gladioli such as this from their broad acres at Langport.

Double Begonias, from Messrs. Cannell, of Swanley, were another feature to-day. A large group of new seedlings were shown, all with flowers as double, and, in many instances, as large as good double Hollyhocks, but only two were chosen for certificates; one, named Mrs. Lynch, with rosetted flowers, four inches across, of a clear rose-pink, and Mrs. Lascelles, very large and double, pale cherry-carmine. These both have vigorous growth and good habit. From Swanley also came some new single Begonia, and the Committee found themselves bound to deviate from the usual rule in not certifying seedling single Begonias for the sake of one called White Lady, whose flowers were of such faultless shape—that is, they were almost, if not quite, circular, and of snowy whiteness—in fact, it is one of the best, if not the purest, white single Begonia yet raised. Among the others were some with orange-red or flame-colored flowers, which were very showy.

For the first time this year Messrs. Cannell sent a selection of the splendid new varieties of Canna, to which I have referred in one of my former letters. Those shown made an exceedingly fine display, and the large, bold-looking foliage, like small Banana-leaves, seemed to set off the glowing colors of the flowers to great advantage. The curious, unsymmetrical form of Canna flowers adds to their beauty, and the uninitiated public look upon them as Orchids. Four Cannas, the pick of a large group, were certificated. These all rejoiced in French names, thus indicating their origin. Admiral Courbet has large flowers, with bright yellow petals, heavily and profusely blotched and spotted with blood-red; Capricieux has flowers with bright orange-red petals, conspicuously and prettily edged with golden-yellow, a most striking sort; Francisque Morel has flowers of a deep crimson, and Madame Just I should describe as nankeen color, it being that peculiar mixture of red and yellow that nobody can intelligibly describe. To these four I should have added one called Felix Crousse, also with singular orange-red flowers. These hybrid Cannas are unquestionably the coming flowers, as they are invaluable for winter bloom. With a little management they can be made to bloom in summer and winter continuously. At Swanley they are grown in an

intermediate temperature, planted out in free soil in a long, narrow, span-roofed house.

Dahlias have made their first appearance at the meetings, and for the next two months we shall be surfeited with novelties among them. To-day there were many new sorts put before the committee, but very few were considered good enough for a certificate. In my estimation the finest sort, and one that will prove of most value in the garden because of its distinct color, is one called Beauty of Brentwood. It belongs to the so-called Cactus Dahlias, and has flowers of the same size and shape as *D. Juarezii*, but the color, instead of scarlet, is a beautiful shade of carmine, or perhaps some would say, carmine-magenta. It is certainly a most telling flower, and one that will make its mark. It received a unanimous vote. Two single Dahlias from Messrs. Cheal, of Crawley, won certificates. One was Victoria, with white florets edged broadly with deep red, the other with broad flat florets of a pale pink edged with buff—a most strange combination of colors, hence its value as a break; but as it only won a certificate by a majority of two votes, you may glean that it did not please every one.

The pretty little white *Campanula isophylla alba* was awarded a certificate. It is not a novelty, but was particularly well grown and flowered. It is a beautiful plant for a suspended pot in a green-house or window, but is not quite hardy in England in the open air.

Mr. B. S. Williams made a fine display of Orchids in flower, and one was singled out for a certificate. This was the rather rare *Odontoglossum Karwinskii*. It has a long flower spike, dull-colored sepals and petals, and a broad labellum colored with various shades of reddish purple, but it is not what one would call an attractive Orchid. Mr. Williams' group was rich in Orchids that flower at this season, the rarest among them being *Cypripedium Sanderianum*, *C. porphyreum tessellatum*, *C. Ashburtoniae*, var. *superbum* (new and beautiful), *C. Ashburtoniae expansum*, *Cattleya aurea*, *Pachystoma Thompsonianum* (a great rarity and very pretty), *Cattleya Eldorado alba* and *splendens*, *Cypripedium ananthum superbum*, *Dendrobium Goldiei*, all of which are worth making a note of as being among the finest of the comparatively few Orchids that flower in the latter half of August. Two new Maidenhair Ferns were shown also by Mr. Williams. One was *Adiantum calpodis roseum*, which has its young fronds of a coppery red hue, the other a crested fronded variety of *A. Capillus-Veneris* named *A. Versaillesense*, a crested, parsley-like Fern. This was awarded a certificate, but the vote was not unanimous. One of the several new varieties of Delphinium shown by Messrs. Kelway won a certificate. It is called Horus, and has a massive spike of large flowers, deep indigo blue, centered with white.

London, August 24th

W. Goldring.

New or Little Known Plants.

Rhododendron (Azalea) Vaseyi.

AMONG the additions which have been made of late years to the Flora of the United States, few plants have a greater scientific and horticultural interest than the beautiful *Rhododendron* figured upon page 377 of the present issue of this journal. Its nearest American ally is the *Rhodora*. In eastern Asia, however, there are two or three species of *Rhododendron*, with the campanulate, irregularly bilabiate corolla which characterizes *Rhodora* and this species, which is very like the sub-alpine Japanese, *R. Albrechtii*. The discovery, therefore, of *R. Vaseyi* added, as Professor Gray at once pointed out, "another to the now very numerous cases of remarkable relationship between the China-Japanese and the Alleghanian floras." *Rhododendron Vaseyi* has been so fully described, that it is only necessary to add to Professor Gray's and Mr. J. Donnell Smith's remarks* upon this plant that Mr.

**Rhododendron Vaseyi*, A. Gray, *Proc. Am. Acad.*, xi. 48; *Bot. Gazette*, viii. 282.—John Donnell Smith, *Bull. Torrey Bot. Club*, xi., 364

Faxon, from whose drawing our illustration is made, notices that the upper or posterior lobe of the corolla is exterior in the expanded flower, a peculiarity we have been unable to detect in the flowers of any other *Rhododendron*.

R. Vaseyi is a tall shrub with slender branches, fifteen to eighteen feet high, with bright, clear pink, precocious flowers, marked towards the base of the upper lobes of the corolla with numerous darker spots. They are quite unlike in color, and appear much earlier than those of other American Azaleas. *R. Vaseyi* was discovered by Mr. George R. Vasey, in 1878, near Webster, in Jackson County, North Carolina; it was afterward found in Cashier's Valley, South Carolina, directly in the rear of the house long occupied, during the summer months, by the Hampton family, where it grows in great luxuriance with *R. arborescens*, occupying the low banks of a small stream; and during the present season it has been found again, this time by Mr. S. T. Kelsey, upon Grandfather Mountain, in North Carolina, only two or three miles from Louisville, "growing everywhere in clumps and patches on the southern and south-eastern slopes, at 4,500 to 5,000 feet elevation, but most abundant and vigorous in moist situations, and is associated with *R. maximum*, *R. Catawbiense* and *Kalmia latifolia*." *R. Vaseyi* takes readily to cultivation, flowering freely when not more than a foot high, and promises to be perfectly hardy in the climate of Boston. C. S. S.

Kœlreuteria bipinnata.

MONSIEUR FRANCHET contributes an interesting account, accompanied with an illustration of the new *Kœlreuteria* of western China, to a recent issue of the *Revue Horticole*. It is one of the most important, from a horticultural point of view, of the numerous discoveries of the French missionary, Delavay, who alone, and remote from all Europeans, has been able in the short space of four years to double the number of Asiatic species of certain genera. The field of his observations is a very limited one, not many square miles in extent, yet he has detected in this small region of the mountains of Yunnan no less than thirty-two new *Rhododendrons*, and as many new Primroses and Gentians.

Kœlreuteria paniculata is a well known, small, ornamental tree from northern China, with large compound leaves, consisting of from six to ten pairs of leaflets and large panicles of yellow flowers, which appear in July. "The new *Kœlreuteria*," Monsieur Franchet points out, "is entirely distinct, as may be judged from the following description:

"*Kœlreuteria bipinnata*, Franch., *Bull. de la Soc. Bot. de France*, xxxiii., 436, t. 93. A very vigorous tree, sixty feet high; leaves twenty-six inches long by twenty-four inches broad at the base, doubly pinnate; pinnæ coriaceous, alternate, distinctly pedicelated, nearly glabrous, dark green above, pale on the lower surface, oval-lanceolate, sharply serrate. The flowers resemble those of *K. paniculata*; they are bright yellow in color, the narrowed base of the petals purple, and are produced in enormous, compact panicles. The capsules are broadly oval, always obtuse, sometimes nearly round, two and a half inches long, turning purple when fully ripe. The seeds are black, the size of a small pea.

"*K. bipinnata*, grows in the forest of Ta-ling-tin, above Tapin-tza, in central Yunnan, at an elevation of more than 5,000 feet. It flowers at the end of July, and the fruit is ripe in the autumn.

"It is a remarkable tree on account of the size of its leaves and the abundance of its flowers. In the autumn its appearance is unique with its immense panicles of large purple pods. It is probable that this new species will grow in cultivation as freely as its relative, but the experiment has not been tried yet. The seed germinates freely, and the young plants grow rapidly. Even if the climate of Paris should prove too severe for this tree, it will no

doubt thrive admirably in western and central France."

The climate of Yunnan is probably not very unlike that of the mountainous portions of the southern United States, and there is a probability that many of its plants will grow in the climate of our Middle States, if not further north on the Atlantic seaboard. One of the most interesting of Monsieur Delavay's discoveries is a large evergreen Magnolia, almost identical with *M. grandiflora* of our Gulf States. The behavior of this tree in cultivation will be watched with the greatest interest, as it may be expected to prove much hardier than the American species, which is confined to the sea-coast, and never extends into the mountains, or even the upper middle districts. C. S. S.

Cucumbers, Egg Plant, Peppers and Squashes are vegetables that will suffer from the slightest frost. Cauliflower, Brussels Sprouts, Celery, Spinach, Parsley, Peas, Lettuces, Endive, Beets, Carrots, Turnips and Radishes are not injured by slight frosts. But do not handle these crops in frosty weather, no matter how hardy they may be. Have frames, sashes, plant-cloth lights, sheeting, mats or other protecting material at hand for use in case of need. Heavy or cold rains are injurious to Cucumbers at this time of year, therefore it is well to keep covered with sashes all the time and tilt these up a little in the warm part of the day. If any gaps occur in recently sown Spinach rows seed can still be sown in the vacant spaces. The recent heavy rains have packed the soil so firmly, and, in many cases, buried the seed so deeply in the ground, that it has rotted. Have a good stock of young seedling Lettuces to prick off thickly into frames, and half grown plants with which to fill up the frames for winter. Earth up the Celery that is to be used before New Year's, a little at a time, and always in dry weather and when the leaves are perfectly dry; and "handle," that is, draw some earth in around, the late Celery, so as to give the heads a compacted rather than spreading form. In earthing up, pack the earth firmly around the heads so as to exclude water from running down and settling among the leaf stalks. Keep root crops clean and keep the hoe at work among the young Beets, Carrots and Turnips, but do not lift any of these for storing before there is danger of hard frost—that is, about the middle of November here. Gather Squashes under cover in an open airy place where they will be free from frost. Have the Potatoes in a dry, cool place, but where the frost cannot reach them and where it is dark enough to prevent the tubers from becoming green. If cellar room is lacking, Potatoes may be stored in pits out-of-doors, but the pits should be shallow, well ventilated, and covered thinly at first, and so arranged that water will readily drain away from them.

Clear away all dead, dying or spent vegetables, and keep the Melon ground clean from decaying fruit. Melon vines and Potato and Tomato vines should not be thrown into the hog pens, but should be wheeled to the rot-pile, as a foundation for compost; but old Cabbage, Cauliflower, Lettuces, Beans, and all other vegetable matter which pigs are fond of, and which decays quickly, can be thrown into the pens with much benefit to the animals and capital returns in the way of a mass of rich manure. In cutting over Asparagus in November, burn the old stalks to destroy the beetle as far as possible.

Glen Cove, N. Y. Wm. Falconer.

Autumn Apples.

FOLLOWING closely the early Apples named in a previous article comes Maiden's Blush, a very handsome

Apple, with a waxen skin and a blush that any maiden might envy. The tree is a good grower and yields well; the fruit is generally smooth and perfect, fine for dessert or cooking, and keeps in good condition longer than the earlier sorts. I have kept specimens till January, but only as objects of curiosity, as they lose their flavor after a time. Another fine Autumn Apple, though of an entirely different type, is the Gravenstein, a handsome red striped Apple, of larger size and higher quality than the Maiden's Blush.

The Porter represents another type, being a conical golden yellow Apple, of fair to large size and excellent quality. The tree is an abundant bearer, though hardly as vigorous in growth as the two last named. Its season is from September to October.

The Fall Pippin, when in perfection, for size and excellent



Fig. 60.—Rhododendron (Azalea) Vaseyi—See page 376.

Cultural Department.

The Vegetable Garden.

CONTINUED wet weather has caused rank growth in Celery, Cauliflower, Beets, Turnips, and other young crops, and an unusual plumpness in Snap and Lima Beans, and vigor in Corn, but it has been very detrimental to Tomatoes and Melons, causing them to ripen slowly and with a marked tendency to rot. In fact, the whole season has been irregular and backward with several crops. A fair crop of Globe Artichokes is usually due in September from plants raised from seed in early spring, but this season, so far, only two plants among sixty have produced heads.

Prepare for frost. Tomatoes, Snap and Lima Beans, Corn,

quality is, unquestionably, queen of all the autumn Apples with which I am acquainted. The tree is of spreading habit and good growth, but it does not bear as early or abundantly as the trees already named. The fruit, too, is liable to apple scab, which mars its beauty. Fifty years ago it was grown extensively in this vicinity under the name of the Vanduyne Apple, and I can remember earning my first money with other boys who were employed, at fifty cents a day, to hand-pick the Apple crop of a neighbor and pack the Apples in single-headed barrels, for carting to New York. But the old trees have disappeared, and now it is difficult to find a tree of mature age. Nevertheless, the excellence of the Fall Pippin should insure a place for one tree in the smallest collection of autumn Apples.

A strong competitor of the Fall Pippin is the Orange Apple. The tree is a better grower and much more productive. The fruit is nearly or quite as large, on the average, and fully as handsome, being really "Apples of Gold," smooth and fair to look upon. When first ripe they are a trifle too acid to suit some tastes for dessert use, but when they become mellow the acidity mellows, too, into a most agreeable flavor. This is at all times an excellent cooking Apple and eagerly sought for by all who know it. This Apple has been confounded with the Fall Orange of Massachusetts and the Lowell or Greasy Pippin, which Mr. Downing records as distinct from the Orange, although this name is sometimes given to it. There is also an Orange Pippin grown quite extensively in New Jersey which I think is different, but I am not so familiar with it that I can assert this positively. The Orange Apple, according to Mr. Downing, originated in this State, and is emphatically a New Jersey Apple; in fact, I do not remember of meeting with it elsewhere. Its season is from October to December.

E. Williams.

Montclair, N. J.

Cannas.

EHEMANN'S *Canna* surpasses others in its magnificent proportions, and in the abundance and persistence of its elegantly disposed, showy flowers. No other plant in the garden displays as great luxuriance in one season's growth. For a mass of it here, twelve feet by forty-five, and now impenetrably thick, and grading from five feet high at the outside to nine feet high in the middle, the plants were set out April 30th, singly, and twenty-four by thirty inches apart, in rich ground. They made very little fresh growth before June, but since then they have grown amazingly, and have been continuously in bloom since early in July. I have never known this *Canna* to mature seed. When set out the plants consisted of one to three shoots each, and now they show from five to eleven stalks to each clump. Last fall, when it was touched by frost, I cut it over at the ground, and, in order to secure a large stock, at once divided the crowns into as many pieces as there were eyes, and these were planted quite close together in a frame heated in winter by a hot water pipe enough to keep frost out, and were left there till planted out. While they were in the frame their leaves were cut back two or three times before planting-time, as they were growing up against the glass, but it did them no harm, and when the plants were set out they were fairly well rooted. All new and rare *Cannas* can be treated in the same way.

The old forms, such as *Warszewiczii*, *Discolor*, and the like can be stored on a dry shelf in the cellar, and left there from November till April unmoved, but we cannot keep *Canna Ehemanni* in that way. It will not bear to be completely dried off with impunity, nor will *Canna flaccida*.

Premices de Nice is the best tall-growing, yellow-flowered *Canna*. It bears branched spikes of clear yellow blossoms that rise well above the foliage. *Nouttoni* forms a grand companion plant to Ehemann's, but it does not grow so tall nor has it such massive foliage. Its flowers are large, showy, and of a rich crimson color. Adolph Weick is another brilliant-flowered sort, but of more compact habit than those already mentioned. If fine foliage is desired more than blossoms we have nothing better than *Robusta perfecta*.

Within the last few years a new race of *Cannas*, popularly known as *Gladiolus*-flowered *Cannas*, has appeared. They are of quite dwarf or of moderate size, and have deep green, glaucous green, or bronzy crimson foliage. The flowers are unusually large and of many shades of yellow, terra cotta, orange, crimson and crimson-scarlet, and are really showy and beautiful. Emile Leclair is a good representative of this class. It has large, golden-yellow flowers, spotted with crimson and scarlet, and pea-green foliage.

In the great flower fields at Queens the other day I noted a large assortment of these handsome *Cannas* in bloom. Among them were:

Admiral Courbet.—Green foliage; flowers large, yellow, with reddish-brown markings. This variety was awarded a first-class certificate by the Royal Horticultural Society at London, August 28th last.

Francisque Morel.—Green foliage; and showy, vivid scarlet-crimson flowers. This variety received a similar award by the same Society, and at the same meeting, as did the last named.

Edouard André.—Crimson foliage; deep red flowers.

Gerard Audran.—Green foliage; flowers reddish or terra cotta color.

François Lapente.—Crimson-shaded foliage; dark purple stems, vivid red-crimson flowers.

Guillaume Coustou.—Green foliage, very strong; flowers yellow, spotted with red, fine.

Revol-Massot.—Green foliage; rich reddish-crimson flowers, streaked with yellow.

Princess de Lusignan.—Green foliage; reddish or terra cotta colored flowers.

General de Neigrier.—Crimson foliage; crimson-scarlet flowers.

B. Cousançat.—Green foliage; vigorous habit; orange-scarlet flowers.

G. C.

Chrysanthemums.

BEFORE the appearance of the chilly nights of late September it is well to have all *Chrysanthemum* plants under cover, as the cold nights, following the warm days, check the young growth and prepare the way for mildewed foliage and poor flowers. While it is a wise plan to keep the plants in the open air as long as possible, they should be securely housed in a light and airy structure before there is any possibility of frost, for, although the plants are quite hardy, the young buds are very tender, and often a slight frost, when they are just beginning to show, will ruin a whole crop of flowers. The house should be one that will admit an abundance of light and air, for good plants cannot be grown if either of these is wanting. When placed in the house the plants should have plenty of room—that is, they should not touch each other, but stand so that there may be a free circulation of air about them, and as soon as possible after they are under cover measures should be taken to prevent mildew, which otherwise may spread rapidly, to the great injury of the plants.

The most efficacious means of preventing mildew is fumigating the house with sulphur, but the grower should be warned that he is dealing with a very dangerous element if carelessly handled. Ordinary sulphur when evaporated is not injurious to the plants, but when heated above a certain degree it is converted into a very different thing—sulphurous acid—which is exceedingly destructive to living plants. Our method of applying the sulphur is by evaporating it over a small oil stove in a common two-quart agate-ware stewpan, filled about one-third or one-half full of flowers of sulphur. The wicks of the lamp are so arranged that the sulphur will boil without burning. As long as it does not catch fire it is safe, but the moment it does so the sulphurous acid is formed, and the house will be quickly filled with the choking, irritating gas, and the plants will appear as if they had been scorched by a severe frost. When simply boiled the sulphur is thrown off much like steam, and will crystallize in very minute particles upon every part of the plants, thoroughly eradicating every particle of mildew; and if this is repeated occasionally the plants can be kept entirely free from it.

As soon as the buds get large enough to be easily handled the plants should be disbudded, using a penknife with a small, sharp point. No set rule can be laid down for this operation, but generally speaking the plants set more buds than can be brought to perfection, and the superfluous ones should be removed if large and perfect blooms are wanted. Many varieties will form a full, strong bud at the extreme end of each shoot, with several smaller ones clustered close beneath it. These latter should always be removed in the large-flowered kinds, as they greatly interfere with the development of the bud that is to remain, and when a specimen bloom is wanted, not only these, but every other bud on the branch, should be taken away, so that all the energies of the branch can be devoted to developing the one left at its extremity. Soon after the plants are housed they need stimulating by some quick fertilizer to bring the blooms to perfection and keep the foliage green and fresh. Liquid manure made by leaching stable manure will answer all purposes, and should be applied rather weak, and quite often while the buds are forming. In fact, once a day, when the plants are badly pot-bound, will be none too often if it is applied in a weak state.

Ordinarily, artificial heat will not be needed in the house until the nights become cold enough to freeze or during cold, rainy weather, when a little heat will be found useful in drying the air.

Arthur H. Fewkes.

Gleichenias

GOOD examples of the various species of this lovely genus of Ferns are not so often seen as they should be, owing in part to the limited stock of some of the species, and consequent high price, and in part to the fact that some difficulty has been encountered by amateur cultivators in persuading them to make a strong and healthy growth. When given proper treatment they soon make exquisite specimens, and wear a more aristocratic air, so to speak, than almost any other class of Ferns, with the possible exception of some of the monarchs of the family, such as the Cibotiums, Alsophyllas and Dicksonias. As to what this best treatment should be, there is, perhaps, some difference of opinion, but I will venture to give in outline a treatment which has proved rea-

Gleichenias do not like to have their roots disturbed after the new growth begins. The propagation of this interesting genus is attended with some little difficulty, because most of the species do not produce spores in quantity, and, therefore, division of the rhizomes is the plan adopted to increase the stock, an operation that should be carefully done, so that each piece has as much root as possible attached, else it will be found hard to establish them. As to the best sorts to grow, it may be said that they all are beautiful, but the following are among the most free in habit and easiest to manage: *G. flabellata*, a strong-stemmed and large-fronded species from Australia; *G. dichotoma*, a charming companion plant for the above, its light green pinnae making a good contrast with the darker tints of its neighbor. Among the finer growing species *G. dicarpa* is, perhaps, the best, closely followed, however, in points of beauty, by *G. Spelunca*, both of the last named being natives of Tasmania, and all the sorts mentioned are best grown in a cool house, where they will make a much stronger growth, and are not so likely to become infested with insects.



A View in Central Park, Minneapolis.—See page 374.

sonably successful. The soil should be rather coarse and composed of good turfy loam and fibrous peat in about equal proportions, with about one-sixth of coarse sand. A little broken charcoal is a desirable addition to the soil, as it tends to keep it in a more wholesome condition. The Gleichenias being naturally shallow rooters, it is better to grow them in pans than in pots, and, in either case, to give them plenty of drainage, as their roots rarely go deeper than four or five inches below the surface. Good drainage is essential, for, though they like an abundance of water when in full growth, yet they are very impatient of any stagnant moisture at the root. A light syringing over the foliage should be given early in the day, and is beneficial during dry, hot weather, helping to keep the plant clear of thrips. In regard to temperature, the mistake is often made of keeping them (the Gleichenias) too warm, a night temperature of 45° to 50° being quite warm enough for most of the species during the winter season, and in summer they should be kept as cool as possible by shading and plenty of ventilation. The best time to give them a shift in pots is early in the spring, before the growth commences, as, in common with a majority of Ferns, the

This list may be extended considerably, but the species named are among the most satisfactory. W. H. Taplin.

Orchid Notes.—*Odontoglossum Razlii*.—This handsome Orchid is very similar in habit to the beautiful *O. vexillarium*, having longer lanceolate foliage of a much lighter green. It should be grown in a much warmer temperature than the last named species, the warmest end of the Cattleya house with abundant moisture suiting it to perfection. The plants, during growth, require every attention, as thrips often attack them, and when they once infest the Orchid it is difficult to dislodge them. Frequent syringings and dippings once a month in a weak solution of soot and tobacco water, will usually keep the plants free from this pest. When well grown this *Odontoglossum* will produce its flowers twice a year. These flowers are borne on erect scapes, three to five in number, during the months of March and April, and remain in perfection a long time.

Angraecum Leonii.—This is a native of the Comoro Islands, near Madagascar, and was introduced by M. Leon Humblot, who has already enriched our collections with many choice

and rare species. It was found at a very high elevation, where the atmosphere at all seasons was cool and moist. It is a free flowering species quite distinct in habit, differing entirely from others of the genus, having long, falcate leaves of a leathery texture, from the base of which stout, erect stems are produced, each bearing as many as twelve handsome blossoms of ivory whiteness, with tail-like spurs, measuring from six to nine inches in length. The flowers, which appear in February and March, are very fragrant, and, if removed to cooler quarters, will remain several weeks in beauty. These plants do not enjoy so much heat as the majority of *Angræcums*, but should occupy a light and airy position in the *Cattleya* house, and, if suspended in baskets or pans, will be found to thrive and flower freely in a mixture of clean, fresh sphagnum, and a small quantity of rough, fibrous peat.

A. D.

Kniphophia corallina.—This is a free-growing, free-blooming form of *K. Macoweni*. On March 6th of last year (1887), I sowed some seeds of it in a pot in the green-house, and in due time pricked them out into a flat, which I kept in a cold-frame all summer. Last October I transplanted them from the flat into a frame from which frost had been excluded in winter, and thence into rich ground out-of-doors last spring. They made very little growth last year, but they have grown vigorously this summer, and nineteen out of twenty-three are now, or have been, in bloom. As a rule seedling *Kniphophias* do not bloom till the third year from sowing-time. As nearly all the varieties are highly decorative plants, and especially useful for late blooming, we should treat them tenderly over winter. By mulching them deeply with dry leaves we can preserve them over winter in the open ground, but it is safer to lift them in fall and winter them in a cold pit, cool green-house or cellar. If an increase of some particular variety is desired at lifting time, we may shorten back the long leaves, then divide the crown into as many parts as we can separate with good roots to each, and plant these close together in a frame from which frost is excluded, in the same way as we do with *Ehemann's* *Canna*, and plant them out in the open garden in spring.

W. F.

China Asters are among the most useful of garden annuals. They are not only beautiful in form and color, but their lasting qualities add much to their value. The cut flowers do not easily wilt, and revive quickly in water when they do begin to droop. Early flowering China Asters mature much more quickly than the later varieties; but to prolong their lives take up a few of the choicest plants, place in small flower-pots, water well, and keep in the dark for a day, and you will soon have a living bouquet of rare beauty for in-door decoration, giving far less trouble than cut flowers, and remaining fresh and in bloom for weeks. The pots can, of course, be concealed if desired. A plant of Dwarf Bouquet taken up just in time to save it from the frost bloomed last year for five or six weeks, the opening buds often presenting curious variations of color and greater delicacy of tint.

Pittsford, Vermont.

G. A. H.

The Forest.

Forestry in California.—II.

IN California a number of small tree-plantations have been made, and, I believe, with very satisfactory results. Several small groves of Locust trees have been reported as having proved profitable, the wood being sold for wagons, etc. The only figures I am able to give, however, apply to plantations of the *Eucalyptus globulus*. One case is that of Mr. Robt. C. E. Stearns, of Berkeley, who reports on a plantation of General Stratton, made in 1869; twenty acres were cut when eleven years old, every item of expense was noted, and a rental of \$5 per year was charged for the land. The net returns on the twenty acres were \$3,866.00. Another case is that of Mr. George A. Nadeau, of Los Angeles.

His figures are:

EXPENSE.	
Cost of trees at time of setting, per acre,	\$7.50
Labor of replanting, per acre,	5.00
Cultivation, per acre,	5.00
Rental of land for seven years at \$3 per acre,	21.00
Expense for seven years, total, per acre,	\$38.50
INCOME.	
Thirty-five cords of fire-wood per acre, at \$3 per cord in the tree,	105.00

Total expense for ninety-seven acres,	\$3,734.50
Total return,	10,185.00
Net profits,	6,450.50

California experience shows that tree-planting is profitable within reasonable periods, and gives returns as soon as some orchards, while requiring less care and less first cost.

From these points it will be clear that, looking at the forest in the most commonplace and most narrow practical view, scientific management is both advisable and necessary. Without it, this immense crop of the forests must disappear, to the great detriment of the country.

While these considerations would doubtless be deemed fully sufficient to a business man to warrant a change in our forest policy, looking to the preservation of the woods from waste and fire, and to the maintenance of their natural reproduction to replace the legitimate demand of trade, there are still other reasons of more pressing force which demand forest-preservation. These are the sanitary and climatic influence of forests, and still more their effect on the agricultural productiveness of the country through the precipitation and distribution of moisture controlled by them, and their importance in equalizing the flow of streams and in maintaining springs. The sanitary influence of forests is well understood by investigators. It will be well, however, to give a few illustrations on this point.

The Roman Campagna in ancient times was covered with woods and groves. From it sprang one of the hardiest and most forceful races of the world. We must therefore infer that it was a healthy locality. Since the clearing of this district, and through modern times, the Campagna has been one of the most deadly miasmatic regions of Europe. Within recent years considerable plantations of trees have been made upon its desolate wastes. One of the largest of these was made upon a large estate near Civita Vecchia. The trees were principally *Eucalyptus*. The amelioration in the health of the locality was prompt. Whereas laborers only remained on the estate in the day and departed to safe places at night, losing much time in traversing the long distance between their work and their shelter, after the growth of the trees they were able to remain with impunity in the district itself. Another plantation on the Campagna was made by the priests at the grand church of St. Paul. The benefit to the health of the fathers was in this case equally marked; the malarial fevers have become less frequent and less deadly.

The Island of Cyprus was formerly celebrated for its luxury and refinement; it contained a large population and was at that time, at least in its mountainous parts, covered with forests. It has been cleared and is now a desolate island of bare rocks, with a few cultivated valleys. It is subject to virulent forms of malarial disease, and contains not a hundredth part of its former population and none of its prosperity. Since the English occupation forest plantations have been commenced on a large scale, but it is too soon to know their effect.

The shores of the Mediterranean show numerous cases similar to these. The island of Mauritius is still another, but we do not have to leave our own country to prove this count. The records of the huntsmen and adventurers who first traveled the wooded western States of America make no mention of malaria as a dreaded malady. The record changed when the settlers came; these cut the trees, and it was then, and only then, that malaria became the scourge to humanity that it is in parts of the United States. While this evidence cannot be held as conclusive, still all experience seems to confirm it. The planting of belts of trees in malarial districts protects localities previously subject to malarial influence. It must be understood, also, in this connection, that the clearings in the western States were a necessity, malaria or no malaria.

Many diseases common in open countries are rare or absent in wooded ones, wherever considerable village populations exist, as in the Black Forest of Germany. The death-rate in the communities of the Black Forest is lower than that of any other part of Germany. Consumption is the disease which, amongst civilized nations, counts the greatest number of victims. In forests this dreadful malady is practically unknown. This fact is now so well recognized by medical men, that they send their patients, even in a climate like that of northern New York, to the Adirondack woods as a cure, to remain not only in summer, but in winter also. The beneficial effects of the Pine forests at Arcachon, in France, and in our southern States, have been availed of in phthisis.

Fog, it is now known by a number of well regulated experiments, is impossible without dust of some kind in the air. In this connection it may be well to call attention to the explanation of our California coast fog. In summer the upper

rents of air are from the coast to the sea. These are charged with dust, which gradually drops out of them, as they lose force on leaving the land. This dust falls into the sea atmosphere, which is charged with moisture, and fog is the result. Fog is irritating to those with weak or defective lungs. In forests this dust, with moisture surrounding it, is sifted out by the foliage, and fogs in forests are always modified, and if the exposure be favorable, are entirely eliminated. Fogs do not occur in dense forests.

Trees all have some odor and many a balsamic and agreeable one. Of such trees the Pines, Firs, Cedars, Eucalyptus and Laurels, Bay and Camphor trees are the best known. The emanations from these have, in general, a sedative effect upon the nervous system, but a stimulating one on the vital functions. These classes of trees are health-giving to the human being, and, to an equal degree, they are fatal to germ life. The importance of this effect will be recognized when we reflect that many diseases are caused and transmitted by germs. Insects will not congregate upon pitch, camphor, myrrh, etc., and the burning of these and many other tree products, as the leaves of Pine or Eucalyptus, stupefies and kills insects and germs. Some vegetable products, as pyrethrum, are more noted and deadly than others.

The philosophy of the attraction that pleasing odors have for man is well worthy of study. The taste or instinct for them is as useful as its complement, the dislike for bad smells, which enables us to avoid infected places.

In the tree the sap mounts from the roots in a crude state, composed of water (oxygen and hydrogen) and a slight admixture of earthy salts; it is carried to the leaf, when it is elaborated by the chlorophyl or minute grains that give the leaves their green color, when carbonic acid is absorbed from the air, and oxygen is liberated from the sap by the decomposition of the carbonic acid. Carbonic acid has a debilitating effect on man, this the tree absorbs; while oxygen is man's life, and this the tree gives.

Trees, while preservative of moisture in dry situations, have a great drying power when moisture is excessive, as in swamps and malarial lands. Few persons realize what an extraordinary amount of moisture a tree is capable of evaporating into the atmosphere. The evaporation takes place through the stomata of the leaves. Of these mouths, 90,000 have been counted on the lower side of the Cherry Laurel leaf, which is devoid of stomates on the upper side; on the leaf of the Lilac 160,000 have been counted. There is a great diversity in this respect amongst plants. The only experiment with which I am acquainted relating to the amount of evaporation which can take place through leaves of trees is that of Marshall Vaillant quoted by J. C. Brown. He took a branch of an Oak and placed it in a vase full of water. He measured the water lost through its leaves and considered himself enabled to conclude that the tree from which this branch had been detached would emit into the atmosphere in twenty-four hours upwards of 2,000 kilogrammes of water, equal to a little more than 5,000 pounds. The abnormal condition under which this experiment was made must cause it to be considered as only an indication of what may take place under normal conditions.

A flow of sap from wounds made in trees for commercial purposes is another indication of this power of taking up water. Pine trees tapped for resin, Camphor trees for camphor Gum and Rubber trees for rubber, show a great flow of sap, but I know of no measure having been taken of it. But measures have been taken of the flow of the Sugar Maple (*Acer saccharinum*) and the yellow Birch (*Betula excelsa*). Emerson cites a Maple six feet in diameter that yielded thirty-one and one-half gallons of sap in twenty-four hours, and Marsh cites one in Warner, New Hampshire, two and one-half feet in diameter, which yielded twenty gallons in eighteen hours; Dr. William cites a large Birch tapped in Vermont, the flow of which was measured from time to time for four or five weeks. The sap ran at the rate of five gallons per hour, progressively diminishing. The total yield was estimated at 1,890 gallons. The flow from these trees was only from one or two auger holes and was insufficient to immediately injure the tree.

When we consider the number of trees which thrive on a single acre we may perceive how important their collective action may become. Trees drain a soil in still another way. Their roots penetrate into the soil and make permeable strata that would otherwise be impervious to water. The channels made by the roots become a means by which surplus water finds its way into substrata, from which it appears later as springs in lower situations. The life activity of plants produces on the oxygen of the air a condition known as ozone. When in this condition oxygen is opposed to germ life, and,

consequently, to all forms of putrefaction. From these points it can be understood why a district is healthier in forests than when it is cleared. The more complete the clearing, the more complete the change. There are other beneficial influences of trees on health, some of which are discussed under another head, such, for instance, as their electrical influence, their equalizing tendency on winds and temperature, and their maintaining effect on springs, whereby wholesome water is secured.

Abbot Kinney.

Correspondence.

Ulmus effusa.

To the Editor of GARDEN AND FOREST:

Sir.—I do not know whether you remember a tree which particularly attracted your notice during your last visit to Berlin. Large, fine and old, it was, nevertheless, no real giant tree, but was attractive through the peculiar form of its head, which, as I was able to tell you, was characteristic of the species, and not merely of the individual. I refer to an Elm on the banks of Lake Tegel, opposite the island of Scharfenberg, which rose tall and lonely from the edge of the wood.

It seems best to retain for this kind of Elm the name of *Ulmus effusa*, which Wildenow gave it in the year 1787, and which appears as the oldest of published names, although that of *U. pedunculata* had been given it by Fougereux three years previously, and had been read at a meeting of the French Academy of Sciences, but never published. Other synonyms are *U. octandra* and *U. ciliata*. The species belongs particularly to the province of Brandenburg. At least I have never seen such enormous examples in any other part of Germany, or the neighboring countries, as grow on the banks of the Spree and the Havel. The trunk attains the size of an Oak and a far greater height. Specimens seventy or eighty feet in height are not uncommon, and there are some of at least 100 feet. In old age it forms sharp, protruding ribs at the base of the trunk, which have deep concave recesses between them. These natural buttresses evidently greatly increase its power of resisting storms and render effectual help in the struggle for existence. Higher up, the trunk becomes more cylindrical, although always inclined to be irregular, and shows an abundance of young shoots, especially where the tree stands on the edge of a wood. Branching generally begins only at a considerable height. But it is difficult to describe the head, which is a wonder of picturesque beauty, easily surpassing in this respect all other trees in Germany. It must be seen in winter to be fully appreciated, although even at other times it makes a marked impression. The branches bend and twist in the strangest curves, often even more fantastically than those of the Oak. Sometimes they shoot outwards, sometimes bend back, and let the playing light penetrate to the very depths of the head. The higher its crest, the more enchanting is its shape, the more it combines grace with power, the more the slender young shoots contrast with the robust forms of the branches. At last it is a whorl of thin, flexible ramifications that droop and hang somewhat like the branches of the Weeping Willow, although not so low. High up over all, however, tall leaders spring out, which add variety to the top. In short, the shape of the head is almost impossible to describe in words. It is quite different in effect from that of the much more familiar *U. campestris*. Its foliage is the least attractive part of *U. effusa*. It cannot be called beautiful, and if compared, for example, with the glossy foliage of the Linden, has a certain poverty of appearance. The rather large, one-sided and unevenly-toothed leaves are rough to both eye and touch, are not very closely placed, and form a surface of dull, dead green. But seen from a distance these defects do not prevent this Elm, wherever it stands, from being an ornament to the landscape. As with all other species of Elm, its blooming period is very early. Its fruit ripens in the month of May, and is produced in very great profusion, so that its first green in spring is due to the fruit and not to the leaves. The effect is extraordinary. Seen from a distance, the brown masses of hanging blossoms give the illusion of autumn coloring. Then follows the transparent green of the unripe fruit, and the leaves do not finally appear until the fruit begins to ripen and add its shading of brown. Although chickens and other poultry greedily devour the seeds of this Elm, its spontaneous distribution is considerable.

U. effusa belongs exclusively to Middle Europe, Germany forming the centre of its area. In Sweden it is not to be found, nor in Italy, except along the northernmost limits of Lombardy. In its wild state, in the province of Brandenburg, it likes the damp, deciduous woods and the swampy banks of

streams, and especially of lakes, so that Gleditsch appropriately called it the Water Elm. Almost all our village Elms belong to this species, and in such places it is more common than any other tree, and vies in size and beauty with the Linden. It is a pleasure to see these giant trunks, sometimes of enormous circumference, shading the village streets or standing in the farm-yards, and serving as supports for the farmer's tools. In these places the accumulation of animal matter is probably one of the causes of its fine development. Without its Elms a Brandenburg village would hardly be conceivable. They are far too plentiful, however, even the oldest among them, for us to fear any marked decrease in their numbers.

Elm bast was formerly used for tying plants, but has now been superseded by Russian Linden bast, and in many gardens by African Replica (?) bast. Yet it is still used in some villages around Berlin for tying beans to the poles, as it is considered more flexible than any other fibre.

Even Rossmueller, in his celebrated book on "The Forest," confesses never to have seen any variety of *U. effusa*. In this respect it forms a great contrast to *U. campestris*, which is so rich in varieties. A specimen raised and growing in Berlin, however, has parti-colored leaves. Seedlings have also been successfully raised to form pyramidal trees, which remind one of *U. Exoniensis*. Specimens of this sort are to be found in the new public cemetery of Berlin, near Friedrichsfelde.

In measuring the Elms of this species in the province of Brandenburg, I have found the maximum to be a circumference of six to seven metres and a diameter of about two metres. Such dimensions permit the conclusion that the age of these trees reaches back into dim antiquity.

As an avenue tree, for which it has been most successfully used for a long time in this country, it can be warmly recommended to our American friends, more especially as it thrives in very scant soil, provided it is not too dry or too compact.

Scharfenberg, Prussia.

(C. Bolle.)

[*Ulmus effusa* has been considered by some botanists a variety of *U. campestris*. Carl Koch, however, whose knowledge of European trees was perhaps unrivaled, agreed with our learned correspondent in believing it to be a distinct species ("Dendrologie," ii. 419). The oldest published name of this tree, antedating by three years that of Willdenow, appears to be *U. laevis*, of Pallas ("Flora Rossica," i. 75, t. 48, f. F.), published in 1784.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—The kind notice of the Onteora Club (the official title of which is "The Catskill Mountain Camp and Cottage Company") in a recent number of your paper tempts me to write you a few words with regard to the condition of the forests in our neighborhood.

The original growth upon this section of the country consisted of large Hemlock trees. These were robbed of their bark some eighty years ago by the tanners from whom Tannersville takes its name, and the ruins of whose long-abandoned and almost forgotten tanneries may still be seen on the banks of the streams in the various ravines of Greene and Ulster Counties. After the tanners had secured all the bark they could utilize, whatever of good lumber was left was secured by lumbermen, who rafted it, where possible, into the Mohawk and Hudson Rivers. The mountain streams have perceptibly diminished in size, undoubtedly owing to the reckless destruction of these large tracts of forest. So many years have passed since this destruction was effected, that a new growth now covers most of the slopes, and there is very little of that nakedness of aspect which so distresses the eye in many parts of the Adirondacks. Yet this new growth is itself in danger of destruction, for many of the mountains are being fast despoiled of their young timber by the chair and furniture factories which now abound in our vicinity. Our woods consist chiefly of Birches, Beeches and Maples, the original Hemlock forest having, in no case, started again in the second growth. The Beeches seem the most hardy and pertinacious, growing in some places in dense thickets so closely that it is impossible to force one's way through them.

It is our intention to look after the trees on our own land as carefully as we can, cutting out all the dead trees, trimming off dead limbs as close to the trunks as possible, and watching the undergrowth with a view to its future as part of the forest. We shall also use our best endeavors to influence local public opinion with regard to forest preservation; and I may note, as a matter of minor interest, that we have already planted

long stretches of roadside with shade trees, choosing the indigenous Maples for this purpose.

Dunham Wheeler,

Supt. "Catskill Mountain Camp and Cottage Co."

115 East Twenty-third Street, New York.

To the Editor of GARDEN AND FOREST :

Sir.—Burr Oak grows in the bottoms in this region, but I have never seen it cultivated. Its timber is valuable and we would like to plant it on tree claims, but do not know how to take care of it. Will you kindly inform us?

A. S.

Jamestown, D. T.

The Burr Oak grows in Dakota. I have examined it on the Red River, the James, and on the Missouri, in Dakota, but from observation and after diligent inquiry, I have learned that it is brittle and of little value compared with Burr Oak timber from further south, where this is quite a rapidly growing tree. In northern Dakota it grows very slowly, much too slowly, where I have noticed it, to make it a profitable tree to plant. Even the acorns of the Burr Oak, near Jamestown, are not as large as hazel nuts, while further south, where this tree is fully developed, the acorns are quite as large as hickory nuts.

Collect acorns as soon as they fall from the tree in autumn, and keep them in moist sand or earth during winter. Sow thickly in drills, and let the seedlings stand one, or not more than two, years, in the drills. Shorten the tap-roots before planting. Many writers claim that tap-rooted trees will never reach their greatest development unless the root is preserved. Experience teaches, however, that the root-pruned tree will soon make a larger and more symmetrical tree than the seedling which has not been transplanted. Examine the stumps of native Oaks ten years old, or those that are fully grown, where they have been extracted by a stump-pulling machine, and you will see that the trees which depended the shortest time on their tap-roots have the best balanced roots, and consequently grew into the best specimens. Robert Douglas.

Recent Publications.

The Tuberous Begonia; its history and cultivation. Illustrated. Edited by B. Wynne.

This is the first of a series of popular works upon subjects directly connected with gardening, which the proprietor of the *Gardening World*, a London periodical, announces. The improvement of the Tuberous Begonia is certainly one of the most interesting achievements of modern gardeners. It seems only yesterday since these plants were first made known, and yet the flowers of no other class of plants, perhaps, have ever been so essentially modified and so improved from the florist's point of view at least, in such a short space of time. It was not until 1864 that the first of these plants was discovered in Bolivia by Mr. Richard Pearce, a collector of the Veitches; and it was not until three years later, at the Paris Exposition, that this plant was exhibited and subsequently described as *Begonia Boliviana*. In 1865 Mr. Pearce discovered, in Bolivia, the yellow-flowered species which bears his name. Two years later this indefatigable and successful collector discovered, in the mountains of Peru, at an elevation of more than 12,000 feet, *Begonia Veitchii*. Unlike *B. Boliviana*, which has small, drooping, narrow-petaled flowers, the Peruvian plant had flowers much more nearly round in outline, and as the progenitor of the modern varieties with the much prized circular flower, its introduction was important. *Begonia roseiflora*, a native of the Andes of Peru, reached England in 1867. This species, although one of the parents of some of the early varieties, has never played a very important part in the improvement of these plants. *Begonia Davisii*, discovered by a Mr. Davis while collecting in Peru for the Veitches, did not flower in England until 1876, and did not appear in commerce until nine years ago. It is a dwarf species with bright scarlet, erect flowers, and smooth and glossy foliage, characters which, when it is crossed with strains derived from *B. Veitchii* or *B. Boliviana*, it has succeeded in transmitting to its offspring; and it is said that nearly all the newer single-flowered varieties, as well as the new race of dwarf, upright, double-flowering varieties, owe their best qualities to *B. Davisii*. *Begonia Clarkii* is only known from a plant discovered in an English green-house, but is believed to be originally from Peru. It is less hardy

than the other tuberous-rooted species, and has been little used by the hybridizer.

From these six species, none of which had been seen in European gardens until twenty-one years ago, the whole race of Tuberous Begonias, single and double, is descended. The fact is interesting as showing the influence of one commercial establishment upon modern horticulture, that five of these six species were discovered and introduced into cultivation by collectors of the house of James Veitch & Sons, which has done more than any one single agency in the last fifty years to increase the number of plants cultivated in gardens. The earliest hybrid Begonia was raised in their establishment by John Seden, whose skill as a hybridizer is commemorated in many genera, by crossing *B. Boliviensis* with an unnamed species, it is said. Other varieties soon appeared, and good strains were raised by English and continental growers, and it may be said by American growers also.

It is needless to attempt to describe all the varieties of these plants, or to mention the different crosses to which they owe their origin. This information, and much sound advice about the care and cultivation of these plants and the use to which they can be put, and other information concerning them, will be found in the little book whose title we have given above. Tuberous Begonias have many claims to popularity. The color of their flowers varies from the most intense scarlet to pure white, and to various shades of yellow. The plants are of neat and graceful habit. There is no plant, not even the scarlet Geranium, which, in flower, can produce a more gorgeous mass of color, or that can be used more effectively for certain decorative purposes. A blazing sun will not cause them to wilt, and the severest and most protracted rain-storm will not dim nor destroy the beauty of their flowers. A green-house is not needed to keep them over winter, as tubers enough to plant an acre or two may be stored in a moderate sized drawer. Tuberous Begonias, however, have their drawbacks. As cut flowers they do not last well, as the petals soon fall; they are practically useless for exhibition purposes, because they lose their flowers in traveling. Indeed, when the plants are grown in pots, it is almost impossible to move them about for conservatory or interior decoration. The Tuberous Begonia is essentially a plant which must be let alone, and allowed to remain where it has grown. The plants are now universally popular in England, and are seen everywhere in the great private show gardens and public nurseries;—where entire ranges of glass houses are devoted to their cultivation, in public parks and in the humblest cottage gardens. In this country, for some not very apparent reason, they are much less frequently grown, and yet the climate is better suited to them than that of England or of any part of northern Europe. The reason may be that we have not yet passed beyond the Scarlet Geranium stage, a disease which seems to have nearly run its course in Europe, or it may be that, as they are not good exhibition subjects, gardeners do not like them, and that, as they are not good for cut flowers, commercial florists cannot make use of them. The American public, at any rate, really know very little as yet of the possibilities in beauty and usefulness of Tuberous Begonias.

Periodical Literature.

In the August number of the *Pharmaceutische Rundschau* (a German periodical published in this city), Dr. Carl Mohr, of Mobile, prints the first of a series of articles on "The Distribution of Plants through the Agency of Animals," a most instructive and interesting chapter, dealing with plant-migrations in the eastern Gulf region of the United States, in so far as they have progressed without conscious action on the part of man.

The district Dr. Mohr's survey includes stretches from western continental Florida to the Mississippi and northward to the limits of the States of Mississippi and Alabama. Here, he says, more than 250 species of plants are known to be foreign intruders among those of native origin. Two-fifths of them have so accommodated themselves to local conditions that they may now be regarded as fully established in their new home. These belong in greater part to the flora of northern Asia and Europe, and in lesser part to that of the Mediterranean region or to the warmer zones of the eastern and western continents. Following in the footsteps of immigration, they remain for the most part confined to the vicinity of settlements, although some of them have spread abroad into the outer wilderness. Many of them are troublesome weeds which, coming from Europe, are now found over the whole of North America, to such a degree that it is sometimes difficult to decide whether they are naturalized or native. Foreign grasses are also found

in great variety, some of them having come without visible help from man, while others, like *Sorghum vulgare*, have been first planted and then spread abroad through the agency of birds. Among plants of tropical origin, *Richardsonia scabra* is noted as having spread, in the last forty years, over the whole sandy region near the Gulf, and as now extending into the highland districts of Alabama. This, the Pigeon Weed or Mexican Clover, makes excellent hay, and is a real acquisition to set against many serious nuisances.

Lospedeza striata, the Japan clover, a native of eastern Asia, offers a remarkable instance of rapid migration. First noticed near Charleston towards the end of the fifties, it was found at Macon in 1865, at Augusta in 1867 and at Montgomery in 1868, growing densely on the fields which had lain untilled during the war, and spreading into adjacent uncultivated regions. In 1869 it had reached Mobile County, in Alabama, having made the journey from near the Atlantic coast in a little more than four years. The war prepared the place for it; wandering cattle sowed its seeds in their excrement, and it now furnishes fodder of good quality in large quantities.

The Ailanthus tree of China is fully naturalized in the Gulf region, as is the Cherokee Rose, which, although some observers believe it to be a native, Dr. Mohr declares to be an immigrant from the same country.

Many plants, especially from tropical regions, have been introduced in ballast and cargoes to the neighborhood of coast towns. Some of them have wandered inland and become firmly established; others are still local or even sporadic. Birds and cattle have brought others from western America, some of real value; and birds, again, have brought others from the West Indies, while the track of industry is strewn with immigrants. In Prattville, Alabama, for instance, an interesting colony of Mexico-Texan plants has established itself in the vicinity of a wool factory, their seeds having been brought from the shores of the Rio Grande in the fleeces.

Helenium tenuifolium was first noticed by Dr. Mohr, growing in a street in Mobile, in 1878. Since then it has spread through Mississippi and Alabama northward for two hundred miles, crowding out the native plants and subduing the foreign weeds. Its home is in the Indian Territory and the western parts of Arkansas. It is a pernicious weed, spoiling fodder by its bitter taste; but the same district has sent to the Gulf States the Chicasaw Plum, which is now so thoroughly naturalized that it is often believed indigenous. Its distribution, like that of so many other plants, is attributed, even by the unlearned inhabitants, to the agency of birds.

Of course the interest of Professor Mohr's article is greatly decreased by the necessity we have been under of omitting the catalogues of plants which he gives in great numbers. We can do no more, however, than wish it may be translated entire for the benefit of those who do not read German. It is not only instructive and most interesting in itself, but, as he rightly believes, valuable as illustrating, with definite and varied facts, the manners in which vegetable transmigration has been carried on during countless ages in the past.

Exhibitions.

Window Gardening in Boston.

THE Window Gardening Exhibition at Horticultural Hall, September 15th, was most interesting and instructive as showing the progress of this admirable work. A marked improvement was shown in the condition of the plants as compared with those exhibited in 1887, and the large attendance of visitors and the number of contributors are most encouraging indications of even better results in the future.

Nearly 200 pots and more than 100 collections of cut flowers were on the tables. The display of W. E. Coburn, comprising forty varieties of wild flowers, and arranged with admirable taste, was a marked feature. The plants of nine exhibitors were deemed worthy of special mention as of superior excellence, and there were besides about seventy small gratuities presented to exhibitors.

A slight collation was served at twelve for those whose homes were distant, and was greatly enjoyed by about sixty children, mostly girls. The admirable deportment of the young people was noted by all, and was most gratifying to the Committee, who have given their services to this enterprise with the purpose of refining and elevating the tastes of the young, providing innocent and useful employment and making homes more cheerful and happy.

It may be set down as an educational fact that a child cannot daily care for a plant, study it and watch its development, and learn to love it, without a decided moral and spiritual improvement.

An attractive feature of the exhibition were two microscopic apparatus, contributed by the inventor, Mr. Stiles Frost. This instrument surpasses all others in the ease with which a flower can be observed, magnified and analyzed. It can be put into position and focused almost instantly, and is so simple that a child of ordinary intelligence can use it effectively. These instruments were surrounded by a throng of deeply interested little Bostonians, who could not withhold their cries of delight as they saw a flower, which before, to them, was only a mass of color, distinctly unfold under the glass its exquisite structure, texture and beauty, opening a new realm in the world of flowers.

During the summer there have been several local exhibits in other parts of the city, the most successful being at Orienta Hall, in Roxbury. Perhaps the most important work of the Committee has been in supplying plants to those that wish them.

These are furnished at cost, delivered free at some convenient distributing point. They are specially propagated, and great care is taken that every plant is of superior quality and certain to flower under proper care.

L. M. C.

Notes.

The second annual exhibition of the Society of Indiana Florists will be held at Indianapolis from the 13th to the 16th of November.

The joint meeting of the American Forestry Congress and of the Southern Forestry Congress will be held at Atlanta, Ga., on November 29th instead of November 12th, as formerly announced.

Harper's Weekly for September 22d contains a four-page illustrated supplement on "Irrigation in the Arid West." The paper was prepared by Richard J. Hinton, and it presents, in a clear and attractive way, the most interesting phases of the great material problem which must soon engage the attention of American legislators.

Some new seedling Gaillardias are mentioned as most promising among the plants in the early September exhibitions in London. The Gaillardia has already become a popular border flower since its great improvement during recent years; but these new varieties are very double and quite distinct from the single sorts. One of them, made up of tubular florets of bright red and gold, is spoken of as most showy.

The students of the Miller Manual Labor School of Albemarle County, Virginia, as a part of their botanical training, have prepared a collection of the native woods of their county, including more than eighty specimens, for the Richmond Exposition. The woods are prepared in blocks, in radial sections, with neat labels, giving the botanical and common name. The extent of the collection illustrates the richness of the forests of the foothills of the Blue Ridge in arborescent species.

Professor Budd, in the recently published report of the Ohio State Forestry Bureau, says, that his experience with the Honey Locust for fence lumber dates back some twenty-five years. Fence rails of that age nailed on posts have outlasted three sets of posts and two sets of Red Oak rails, and the Locust rails are yet mostly good. The rails were split and nailed on in June and July. Posts made from Locust timber, seasoned one summer before setting, and mixed with White Oak posts treated in the same way, lasted equally well.

Of the Viburnums, none are now more showy than the High-bush Cranberry, as its brilliant scarlet fruit lights up its heavy foliage. The neat Arrow-wood (*V. dentatum*) is also at its best now, with its large clusters of blue fruit and its shining leaves. The dwarf *V. cassinoides*, with pink and blue berries among its deep green leaves, makes a good companion for the others, and when planted on rich soil is hardly surpassed by any other shrub of its size. These Viburnums, beautiful during spring and summer in flower, foliage and habit, are doubly useful for the new charm they develop as their fruits ripen in autumn.

A correspondent of *Nature*, writing from Noumea, in New Caledonia, upon the dispersion of seeds and plants, records the fact that thousands of acres of pasture-land have been absolutely ruined on the island by the spread, through the agency of birds, of a species of Lantana, introduced by the first Catholic missionaries sent to the island, as a hedge-plant to surround their property at St. Louis, or Conception. The

history of the "*Gendame* plant" is not less interesting. It is an Asclepiad of which a seed was brought to the island from Tahiti by a *Gendame* in his pillow. The *Gendame* shook out his pillow, the seed, with its silky attachment, floated off, fell upon suitable soil, germinated, and now the "*Gendame* plant" has injured the island as much as the missionaries' hedge.

Mr. E. S. Carman, of the *Rural New Yorker*, early this spring undertook to raise Potatoes at the rate of 700 bushels per acre by planting them in trenches. These trenches were eight inches deep and one foot wide. The bottom of the trench was loosened with a prong hoe, and the cut tubers were laid one foot apart in the row. Then a thin layer of soil was placed over them and a dressing of sulphur added to discourage the cut worm. Mapes' potato fertilizer, 880 pounds per acre, was placed below the potatoes and the same amount above. Last week the crop, in five rows each thirty-three feet long and three feet apart, was harvested. The first row yielded at the rate of 684 bushels to the acre, the second at the rate of 605 bushels, the third at the rate of 1,076 bushels, the fourth 299 bushels, and the fifth 253 bushels, the entire plot yielding at the rate of 583 bushels per acre. The Cucumber flea beetle had injured all the tops, and especially those in the last two rows, which were of an early variety.

The managers of the Pennsylvania Railroad recently passed a resolution that all the bridges of short spans on the road should be rebuilt in brick or stone, instead of iron. They were actuated by purely practical considerations relating to the recent increase in the weight of locomotives which the improvements of the past few years have brought about, and the consequent inability of the iron bridges to bear the strains to which they are now subjected. But in commenting upon their resolve, *The American Architect and Building News* rightly says: "Aside from their greater safety, however, bridges of masonry have the æsthetic advantage of being usually interesting and often very beautiful objects, while iron truss bridges have never yet been endowed with anything more than an engineering attraction. The roughest stone arch across a roadway presents a beautiful combination of lines, a fine contrast of light and shadow, and a picturesque effect of landscape beyond, together with an expression of quiet durability which is more needed in our architecture than any other quality. . . . Already our country railway stations, under professional care, are fast becoming transformed from hideous sheds covered with clapboards into charming buildings of stone, picturesque, solid and convenient, often quite richly decorated, and generally surrounded by pretty and well-kept gardens. The better class of these new stations in this country are far more beautiful than those of foreign roads, and if the design of the bridges could be brought up to that of the roads, the line of every well-managed road would furnish a route of considerable architectural interest."

It is well known that a difference in luxuriance of growth shows, not only in the size and shape of plants, but also in their color, individuals which are well nourished being of a darker green than others of the same species which obtain insufficient food. But it is seldom that a knowledge of this fact is turned to good account in so curious a way as has recently been done by a German archaeologist, who has recently been excavating the remains of the Roman camp of Carnuntum, near Altenburg, a small town on the Danube between Vienna and Presburg. "It appears," says the *London Times*, "that Professor Hauser, ever on the alert, had for a month past observed the color of an extensive corn-field, which varied in every part. He found an elevated post of observation, and, after a week's close attention, declared it to be his opinion that the corn-field was growing over the site of an ancient amphitheatre. His drawings showed that the oblong centre piece was somewhat concave, and the corn was quite ripe in that part, because there was so much soil between the surface and the bottom of the theatre. Elliptical lines of green, growing paler the higher they rose, showed the seats, and lines forming a radius from the centre showed the walls supporting the elliptical rows of seats. The Professor waited impatiently for the corn to ripen, and the moment it was cut the excavations began. They have shown that the almost incredible suggestion was perfectly correct. Six inches below the soil the top of the outer wall was found, and from there the soil gradually grew thicker until the bottom of the arena was reached, the pavement of which is in perfect condition. From the theatre a paved road leads to the Camp of Carnuntum. As soon as the theatre has been entirely freed of soil covering it, all the measurements will be taken.

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Forestry Commissions.

THE preliminary reports relating to the forest-wealth of the United States, published by the Census Office six or seven years ago, gave rise to a very general discussion in the public press upon forests and their complex relations to the welfare and development of this country. The most visible outcome of this discussion, perhaps, was the appointment in a number of states of Forestry Commissions for the purpose "of preserving the forests;" and the question has been asked us more than once by members of these commissions how they can perform their duties so that the communities which created these commissions can derive the greatest benefit from these new organizations. In other words, what can Forestry Commissions in states like New Hampshire or Kentucky or Pennsylvania do to save the forests in those states? The answer is not an easy one to give. The states in which these commissions have been appointed own no forest-land whatever, with the exception of New York, where the state holds great bodies of wild and forest-land, and of California, where land has been presented to the Commission in order to enable it to carry out various experiments in silviculture.

So far as New York is concerned it is evident enough what the Commission ought to do. It controls or can control nearly 800,000 acres of forest-land; laws, still inadequate, certainly, although far in advance of those in any other state, enable them to protect this great property; and they are freely supplied with money for this purpose. It is within the power of the Commission, therefore, to put into practice some of the well known rules under which forests are protected and developed. If the Adirondack forest—or those portions of it, at least, which the state owns—is allowed to suffer, it will be the Commission and the Executive who appointed it who will be to blame.

In other states, where there are no state-forests to administer, and in which the Commissions are almost always left inadequately supplied with money, it is not easy to see how they can exert their influence directly. Administrative powers they cannot have, for no state-forests are

placed under their control; and the time has not yet come when private owners of forest-property will turn it over to be administered by state-officers. It is evident, therefore, that the field of usefulness for these commissions is limited, and that their work must be advisory and educational. They must become, if they are to justify their existence, the teachers of the people in all that relates to the forest. The Pennsylvania Commission, backed by an active society interested in forestry and equipped with a special organ devoted to disseminating information relating to the forest, has already made a beginning in this direction. But its efforts, as is natural in a new organization, lack system; and this is true of the educational work attempted up to the present time by the Commissions in other states.

As our advice has been asked, we shall be permitted, perhaps, to say that the Forest Commissions of the different States and their friends and all others interested in this country in the question of forest-preservation, will accomplish nothing until they unite together in the adoption of some general scheme for educating the people of the United States in the questions relating to the forest. What is needed in this country now is such a discussion of the forest-question, such an awakening of the intelligence of the American people to the importance of the forest, that it will be possible to secure (1) legislation from Congress, under which the forests upon the national domain may be administered for the good of the whole people of the United States for all time, and not for rings of contractors and timber thieves whose only interest is to cut every stick of timber, and then, after the forests are utterly ruined, abandon the land to hopeless worthlessness. Such an awakening is needed to secure (2) the enactment of laws in every state, under which forest property may be made secure from depredation and needless fires, and a condition of public intelligence which will make it possible, in the case of the forest, to subordinate private interest to the general good. But before this time comes the public of the country must learn that the welfare of the public is often dependent on the forest of the individual, and that if the individual is allowed to do with it all he may wish, he endangers the community. The time probably will come when the farmers of the United States will realize that the pasturage of animals in their woods is not only an injury to themselves, personally, but to the whole community, and will consent to forego this privilege; and they will learn that the clearing of the water-shed of a mountain stream or lake may bring incalculable injury to persons whose names they have never even heard. But the mental development which will make intelligent legislation upon such subjects possible can only come after long years of discussion and education. In inaugurating such discussion and in stimulating such education State Forestry Commissions will find their real and only field of usefulness, and failing in this they will show their unfitness for existence.

The Ailanthus.

A WRITER in a recent issue of the *Rural New Yorker* calls attention to the beauty and value of the much abused Ailanthus tree for planting in city streets. It is indeed one of the best trees that has ever been tried for this purpose, either in this country or in Europe, and no exotic tree, with the exception, perhaps, of the White Willow, has yet shown such capacity for adapting itself to the peculiarities of the American climate. The only possible objection to the Ailanthus is that the flowers of the male plants have an exceedingly disagreeable odor to some people, and that the pollen is supposed to produce catarrhal troubles. But, as the writer in the *Rural New Yorker* points out, this objection can be very readily obviated by raising plants from root-cuttings taken from the female plants only, and by avoiding the use of seedlings, among which there might be expected to be as many males as females. As the Ailanthus grows rapidly from cuttings, a supply of plants

can be secured quickly in this way. A moderately severe pruning of the male trees made in the spring every second year will generally have the effect of stimulating growth to such an extent that the trees will not flower.

Our contemporary hardly does justice, however, to the great economic value of this tree, which is surpassed, in the value of the material which it yields, by few North American trees; and certainly there is no tree which can be made to grow in the United States which can produce so much valuable wood in such a short time. The wood of the *Ailanthus* must be compared in heat producing properties with white oak, black walnut and birch. It is less valuable than hickory, but hickory—the best fuel, all things considered, our forests furnish—makes a no more agreeable, although a somewhat hotter fire, than *ailanthus*, which burns steadily and slowly without snapping, giving out a clear, bright flame and leaving a good bed of coals. The amount of ash left after the combustion of the wood is remarkably small. The great value of the *Ailanthus*, however, as a source of fuel supply, lies in the fact that it makes wood, even in poor soil, more than twice as rapidly as any of our trees which produce fuel of anything like the same value. The fact has not been demonstrated by experiment, but it is safe to say that an acre of ground planted with *Ailanthus* would yield at the end of thirty years more than twice as much fuel, in bulk and in actual heat product, as the same piece of ground planted with Hickory or Oak.

Ailanthus wood, in spite of the rapid growth which this tree makes, is both heavy and very strong. It neither shrinks nor warps in seasoning, and as material for the cabinet-maker it has few superiors among woods grown without the tropics. In color it is a clear, bright yellow, and although coarse grained, it can be made to take a fine polish.

Take it all in all, for hardiness and rapidity of growth, for the power to adapt itself to the dirt and smoke, the dust and drought of cities, for the ability to thrive in the poorest soil, for beauty and for usefulness, this tree, which the Abbé d'Incaville brought back with him from China more than a century ago, is one of the most useful which can be grown in this climate.

Notes from a Naturalist in Mexico.

FIRST impressions of a new country are often deceptive, and Mexico is such a large and physically varied region, that it would take months of travel to see even the most interesting parts of it; but having now passed through about 1,500 miles of the republic, the impressions made on one who has spent years in Eastern travel, but had never seen the New World, may not be without some interest. A tropical country without tropical heat or vegetation is, perhaps, what one would be inclined to say, and certainly the really tropical parts of Mexico, as regards natural productions, are very small as compared with the bare and treeless highlands. One might, however, say the same of India if one went from Peshawur to Bombay in the cold weather, and, as Wallace has so well pointed out, really tropical vegetation requires conditions which only exist in limited areas of the east coast and larger parts of the western slopes of the highlands of Mexico.

From El Paso, on the United States frontier of New Mexico, to the City of Mexico, one passes for sixty hours, at a slow railway speed, through interminable plains of an elevation varying from 4,000 to 8,000 feet, bounded by low, treeless and desolate-looking mountains, without seeing a single town of any real importance, a single glimpse of forest, or a green spot of earth excepting what is made so by irrigation; and the few small rivers crossed on the route are half or quite dry. The only striking plants seen from the railway are gigantic *Yuccas* and a few species of *Opuntia*, *Cereus* and other *Cactaceae* plants; but even these are not half so numerous or varied as one supposes from the great numbers which exist in the northern part of Mexico. When at last one arrives at the so-called Valley of Mexico—which is not a valley in the usual sense of the word, but rather a high-lying plateau, containing large lakes which receive the drainage of the hills around, and have no natural outlet—one expects to see a view of unparalleled grandeur, but this is, like many other popular im-

pressions, by no means the case. The distant cone of Popocatepetl and the more picturesque mountain of Ixtaccihuatl, which, though somewhat lower, has more snow at present on it, are no doubt very high and remarkable mountains; but their distance, the haze through which they are seen and the want of beautiful foreground in the view, make the scene, in my opinion, infinitely inferior in grandeur and in impressiveness to many of far less reputation, both in the Alps, the Pyrenees and the Himalayas. As to the climate, one must not be too critical at this season, especially when one has just left a winter of unusual severity, both in the United States and Europe, but it is not my idea of a tropical or even a very nice climate. Bright sun and continual almost cloudless sky, cool air, even cold in the morning, with glare and dust, are the characteristics on the plateau and highlands of Mexico for five or six months of the year. Pine forests, which I had always expected to find one of the features of the country, are diminishing yearly through the unchecked devastations of fire, charcoal-burners, goats and sheep, and I have not yet seen a tract of forest which has not been much injured in this way, or of which the more accessible parts have not been, in a great measure, destroyed. To find this one must go up to 8,000 or 9,000 feet on the slopes in the environs of the City of Mexico, so tempting to a naturalist at this season. We lost no time in going on to Orizaba, about two-thirds of the way in distance to the east coast, and at little more than half the elevation of Mexico City. Here, in the midst of Coffee plantations, Sugar Cane and Bananas, with the volcanic peak of Orizaba 17,000 feet high at a short distance, one can find, by looking for it, some really charming bits of forest, but always in deep gorges or barrancas, and never in easily accessible situations. Birds, as in the Valley of Mexico, are numerous and varied, but not especially striking in color, size or form. Butterflies are fairly numerous, but mostly belong to the family of *Hesperidæ*, which alone are common at this season. Moths, excepting a few day-flying *Ægeriadæ*, are scarce, and other insects, excepting Dragon-flies, not very showy or numerous. Orchids are fairly abundant, but few showy ones are now in flower, and though the gardens and plantations round the town are full of beautiful, showy plants in flower, of a more or less tropical character, such as *Hibiscus*, *Erythrina* and *Datura*, yet most of them are exotics. A fortnight's stay in Orizaba enabled me to explore the environs pretty thoroughly without finding a single spot within five or six miles which could be called a first-class collecting ground, though, at the same time, I feel sure that Orizaba would yield a very large number of plants, birds and insects to a resident collector. Tuxpango, about three hours to the south-east, is the best place I found, and here are some very picturesque waterfalls and a lovely tropical gorge, with some fine Coffee plantations under the shade of the forest, which pleased us more than any spot yet visited. On the mountains around Orizaba, which, however, are very steep and pathless, there are some rich and interesting spots in which I found a few fine plants and rare insects; but the sky, though generally bright in the morning hours, usually clouded by noon, and the weather was not nearly so hot as one would expect in latitude 19°, at 4,000 feet elevation.

Going on from Orizaba towards Vera Cruz, one passes through a very rich and fertile country, where Bananas, Pineapples, Coffee and Sugar are largely grown about Cordoba, and here in the plantation of M. Tonel, a Belgian gentleman, who has been settled in Mexico for many years, I saw a large number of species of Palms, and very many interesting and beautiful tropical and sub-tropical plants. Indeed, I should say this was by far the most interesting garden in Mexico, as the proprietor has a Belgian gardener, and goes to much trouble and expense in making his plantation rather a botanic garden than an ordinary Coffee plantation. But still there is no virgin forest until one gets on towards Attoyac, where the railway passes through some scenery of the true tropical character, and in the few hours I was able to spend here I saw what I had been hoping for so long. As, however, Attoyac is said to be very unhealthy at all seasons, and there is no accommodation for a stay, I could only regret my inability to give it a thorough exploration, though probably there is no great amount of novelty to be expected, this part of Mexico having been better worked by naturalists than any other. Below Attoyac you get into the dry plains bordering the coast, which are, for the most part, covered with low, thorny or scrubby forest or coarse, wiry grass, and infested with small insects called *pinolillos*, which, judging from the amount of precaution and trouble the inhabitants take to get rid of them, must be very disagreeable indeed. A gentleman who got into the tram-car on our way up to Jalapa, two stations out of Vera Cruz, had got amongst

these *pinillos* in passing through some bush, and spent over half an hour, with the assistance of several other passengers, in picking them out of his clothes. A magnificent yellow-flowered tree, figured in Brologsa's "Centrale America," was the most conspicuous ornament, at this season, of these dry, low-country jungles, for I can hardly call them forests, and here alone have I as yet seen Palms growing as a conspicuous feature in the scenery, though several dwarf and slender climbing Palms were common in the gorges about Orizaba and Attoyac, together with two fine plants belonging or allied to the *Musaceæ*, both in flower at this season.

Vera Cruz, though unusually cool and healthy for the time of year, owing to the heavy northerly gales which have prevailed during most of the month of March, and which account for the cloudy, cold weather at Cordoba and Orizaba, is not a place that would tempt any one traveling for pleasure to stay in; and as its hotels are detestable, we lost no time in getting off to Jalapa, which lies on the eastern slope of the mountains about fifty miles north of Orizaba. The old road up to Jalapa is said to give an excellent idea of the gradual change of climate and vegetation from the coast upwards; but if this is true, I cannot say the same of the new tramway, which takes one over the forty miles and 5,000 feet of ascent in about eleven hours, mules being the motive power, as on many other lines in Mexico. The first half of the way is all through the dry coast jungle or chapparal, as it is here called, full of Mimosas and other thorny trees and bushes. *Bromeliaceæ* are very conspicuous and abundant, as in most parts of this region, and several very fine arborescent Bonaparteas and gigantic *Cereus* were common at about 2,000 feet. But on the whole line there is not a single mile of forest which can be called fine or luxuriant, and water is so scarce that the villages on the route are both few and poor. One fair-sized river is crossed at Puente Nacional, and here we saw some lovely flowering trees, though the speed of the mules, except on steep ascents, did not allow much botanizing. A very graceful, feathery Bamboo, growing about fifteen feet high, appeared at about 3,000 feet in one place only on the road, growing gregariously among shrubs and trees, but beyond this I saw nothing very striking. When we got up to about 4,000 feet, an open, grassy country, with occasional trees, and small groves in the ravines, was entered, which, through the influence of a small, driving rain and dense mist, made the country look more like the Highlands of Scotland than Mexico; but, notwithstanding the cold, hedges of wild Pineapples showed that the mean temperature must be high. Jalapa itself, when reached, is decidedly the most enjoyable place of residence for a naturalist that I have yet seen in America. The climate is damper and cooler than that of any place of similar elevation I have seen. There are numerous bits of very charming country of varied character within a walk of the town. A very tolerable hotel, curé, and law-abiding inhabitants, a capital naturalist's servant, named Alyssio Trujillo, who accompanied us for some time, and can both shoot and skin birds well, and fine weather, all combined to render our stay at Jalapa a bright and delightful sojourn. There is between Jalapa and Coatepec a good deal of real virgin forest, abounding in plants, birds and insects, and having at least two broad and good roads through it, without which collecting in a virgin forest is so difficult and incomplete. At this season the forest, which consisted largely of Planes, Oaks, Liquidambers, and other trees of a temperate aspect, was dry and pleasant to go about in, and numerous small clearings in it made a variety which, if not carried to the extent which it generally is, is favorable to all animal life. On the north side of the town, at about an hour's distance, is a delightful park-like grazing country, covered with groves of trees, and intersected by richly-wooded gorges, a very paradise for birds, and having in fine weather a perfect climate, though it is said that the rainy days in the year outnumber the fine ones. Farther on towards the north we did not go, but Mr. Godman, who spent a month in and about Misantla, three days' ride north of Jalapa, describes the deep descent from the tableland to the dense forest as very fine, and the country extremely rich and productive to a naturalist. North-west of Jalapa is the Cofre de Perote, a volcanic mountain 13,000 or 14,000 feet high, with fine Pine forests on its slopes, but at this season the high country was too cold to visit for collecting purposes, and I am unable to say whether the Pine forests on this slope are as much damper and richer in herbaceous plants and accompanying insects than those of the central plateau, as one would expect them to be. We returned from Jalapa to Cordoba on horseback, a ride which, for varied vegetation, beautiful scenery, and general interest would be hard to beat in Mexico; and though on two of the five nights spent on the road our lodg-

ings were of a very primitive character, yet a lady was able to enjoy it thoroughly. Some of the barrancas—five crossed on this ride—are very deep and perpendicular; two rivers have to be passed on rafts, the horses swimming or wading, but the ride along the edge of the Barranca de los Pescados, ascending from 2,000 to about 5,000 feet, on the second day, has many very fine views indeed, and the peak of Orizaba, both on this and the next day, is an object of culminating importance. In the Oak forest between Las Balsas and Pinea *Bromeliaceæ*, Orchids and other Epiphytes were in the greatest abundance. I gathered thirteen or fourteen species of Orchids in an hour from the low trees without getting off my horse. This was between 3,000 and 4,000 feet, but a few miles further on we got into a region where, though the forest was much finer and denser with green undergrowth, Orchids were not so numerous or varied.

We saw a fine dark crimson Hibiscus, with a trailing habit, in this part of Mexico only, and a splendid Gesneriaceous plant of great size growing in the damp, shady ravines, together with many Tree-Ferns and other large and handsome Ferns, which seemed more abundant about San Bartolo than anywhere I have yet been. In fact, we thought San Bartolo as good a place for collecting as any in this part of the country. It is charmingly situated in the midst of a good deal of virgin forest, at about 5,000 feet, and within easy reach of deep, hot gorges full of purely tropical vegetation, and close under the high slopes of the Volcano of Orizaba.

Beyond Huatusco, where we slept on the third night from Jalapa and found very fair quarters, the country becomes less broken and picturesque, though still very pretty. Returning to the high plateau of Mexico, we found the contrast between the dry, dusty, windy climate and the region we had just left, even more striking than at first. Round Pueblo, where we stayed a week, there is little or no indigenous vegetation, except here and there on dry rocky hills and in the few places where the soil is too poor for cultivation. The Malinche, an extinct volcano of 13,000 feet, is covered on its lower slopes with stunted Pines, which are fast succumbing to the attacks of the woodman and charcoal burner; but the only spot where we have found any forest at all likely to contain much of interest is at El Pinal, about twenty-five miles out on the railway leading to Los Llanos, and here are a good many birds and insects quite different from those yet seen, and some *Vacciniæ* and other plants, which are apparently quite at home on the dry sandy granite, of which these hills seem to be mostly composed.

Cirencester, England.

H. J. Elwes.

Foreign Correspondence.

London Letter.

A GOOD number of first-class certificates were awarded to new and rare plants and flowers at the meeting of the Royal Horticultural Society to-day, the most important of which was the Nepaul Lily (*Lilium Nepalense*), which has flowered here for the first time in cultivation. It was introduced and shown by Messrs. Hugh Low & Co., of Clapton. It is distinct and beautiful, and its certificate-vote was unanimous. The only Lily with which I can compare it is the rare *L. polyphyllum*, also a native of the Himalayas, which is somewhat similar in growth and flower. The stem of *L. Nepalense* is slender, about three feet high, sparsely furnished with short and rather broad, deep green leaves. Each stem is terminated by a single flower, which is about four inches across, and with sepals and petals reflexed. The ground color, an intensely deep purple-crimson, is mottled with yellowish-white, and the tips of each petal are of the same pale color. It cannot be termed a showy Lily, but it has a peculiar form and color which every one admires. Mr. Baker, the authority at Kew on Lilies, had never before seen it in flower, though he knew it well by descriptions and illustrations. It is a native of the temperate portions of the western and central Himalayan region, and it may not prove a perfectly hardy plant in England. If, however, it is not hardy, it is a beautiful green-house Lily.

The certificated plant next in importance was the exquisite white-flowered variety of *Oncidium ornithorhynchum*, an Orchid as rare as it is beautiful. It is the counterpart of the typical form now common, except that the

flowers instead of being pink are of ivory whiteness with golden-yellow crests. They possess the same delightful perfume which some compare with the scent of newly-mown hay. The flowers are small, but very numerous, and are borne on a loose spike which drops in a graceful way. The exhibitor of this treasure was Mr. B. S. Williams, of Holloway nurseries.

The lovely *Romneya Coulteri*, of California, introduced over a dozen years ago, was exhibited for the first time in flower to-day, though it has flowered several times in various gardens of late years. Mr. T. S. Ware showed it on this occasion, and its beauty so won the committee that its certificate-vote was unanimous. [This plant was described in the issue of this Journal for August 15th.—E.D.]

A variety of the well-known Cape bulb, *Tritonia aurea*, with crimson blotches on the orange-red sepals, was shown by Mr. James O'Brien, and received a certificate. It differs from the typical form chiefly in the color of the flower. The crimson blotches are conspicuous, and increase its beauty. This *Tritonia* is one of the showiest of bulbs for the green-house during August and September, and in some of our southern gardens it is perfectly hardy.

Eremurus Olga, a noble Liliaceous plant introduced a few years ago from Turkestan, was shown by Mr. T. S. Ware, and received a certificate as a first-rate hardy herbaceous plant. All the *Eremurus* have long narrow leaves like an *Asphodel* or *Kniphofia*, and produce tall spikes crowded with small blossoms. *E. Olga* has a flower-stem rising from three to five feet in height, and for fully half its height is furnished with small white flowers. The flowers expand from below upwards, and as from six to nine inches of the stem carry expanded flowers at a time, it is some weeks before the spike is exhausted. It is quite hardy here.

The Chrysanthemum season has already commenced, the first new variety being shown to-day; it was so fine that no hesitation was made in certificating it, notwithstanding the many fine early varieties we have. This sort is called Mrs. Hawkins, and is a sport from another fine variety called Wormig's Yellow. The flowers of Mrs. Hawkins are from five to six inches across, very full but flat, the florets being long and narrow. The color is a rich golden yellow. The vigorous growth, fine habit and floriferousness of the novelty had a good deal of weight with the committee. From this date onward to February and March we have Chrysanthemums at every meeting, so that we might well say that their season extends through half the year.

A very fine new white Carnation named Madame Carle was certificated on account of its free growth, abundant bloom, fine form and the purity of its strongly perfumed flowers. It is a first-rate market variety, as it flowers almost constantly. The exhibitor was Mr. May, one of the chief growers for market, who also showed finely flowered specimens of such favorite sorts as Miss Joliffe, pink; Dr. Raymond, crimson-clove; Pride of Penhurst, yellow; and Andalusia, which last is considered the finest yellow of all for market, as it is hardly ever out of flower. The color is not so pure as that of Pride of Penhurst; but the flower is finer and fuller, while the growth and habit is vastly superior.

A new hybrid *Dianthus* named Splendor was certificated as a first-rate border plant on account of its dwarf, compact growth, profusion of bloom and rich color. It is a cross between *D. Heddewigii* (generally treated as an annual) and the Sweet William (*D. barbatus*). The progeny is quite intermediate both in growth and flowers, which are about one inch across, with fringed petals and borne in loose clusters. The color is an intensely deep crimson with mottlings of black on the petals. The exhibitor of it, Mr. R. Dean, also showed a double white variety of *D. Heddewigii* called Snowdrift, with flowers of remarkable purity.

Among the crowds of new Dahlias put before the com-

mittee, including double, single and cactus varieties, there was but one considered worthy of a certificate. This was a single Dahlia named Mikado, a large well-shaped flower of a bright Indian red streaked and tipped with yellow. It won a certificate by a narrow majority, as some of the committee, myself included, considered it by no means beautiful. In Kelway's collection of Gladioli there were numerous new seedling sorts set up for certificates, but only two were selected. These were Castro and Besler, the first having enormous flowers of a delicate carmine-pink tint with white centre and lower petal, while the second was a smaller flower and spike, vivid crimson-red flaked with a deeper tint. The hundred or more spikes shown to-day were, if anything, finer than those shown a fortnight ago, the splendor of which I alluded to in my last letter.

Besides the first class certificates awarded, there were two Orchids that received botanical certificates, which mean that although the plants are interesting botanically or are rare, they do not, in the opinion of the floral committee, possess sufficient merit for general cultivation. These Orchids were *Disa graminifolia* and *Lælia (Trigonidium) monophylla*, both of which, in my estimation, possess exquisite beauty, though small in growth and flower. The *Disa* is a South African species, having tiny tubers that send up very slender flower-stems before the grass-like foliage. The flowers are less than an inch across, but are of a lovely purple-blue color, which is so rare among Orchids. The *Lælia* is a pretty plant, too, of tiny growth, somewhat like a *Sophronitis*. Its flowers are about one and a half inches across, and of a bright orange-scarlet. Though so small, this Orchid is one of those for which extravagant prices have been paid, perhaps more on account of its rarity than its beauty.

Lilies formed a conspicuous feature in the show, and of *L. auratum* alone there were probably a hundred spikes, representing numerous varieties. Our king of Lily-growers (Mr. G. F. Wilson) brought some wonderful specimens of *L. auratum rubro vittatum*, the variety with enormous flowers with each white petal broadly banded with blood red. He also had huge stems of *L. auratum*, var. *platyphyllum*, with flowers nearly a foot across, while from other gardens came the *Virginale* variety, whose flowers are devoid of the spots and blotches seen on the petals of the ordinary kind. The various forms of the Tiger Lily, *L. tigrinum*, were also in their full glory on this occasion.

London, September 11th, 1888.

W. Goldring.

New or Little Known Plants.

Tigridia Pringlei.*

THE Tiger-flower, the well known *Tigridis Pavonia*, a native of the valleys of southern Mexico, early attracted the attention of the Spanish conquerors, and became known by reputation under the name of *Tigridis flos* long before it had been seen by any botanist. It was first described by L'Obel (Lobelius) in his *Plantarum Historia*, published at Antwerp in 1576, where he gives a very rough but recognizable wood-cut of the plant from a colored figure which he had received from his friend, Joannes de Brancion. Hernandez also describes it in the *Historia Plantarum Novæ Hispaniæ* (1651), giving the same Latin name, *Flos tigridis*, and the Aztec name, *Oceloxochill*. He speaks of it as growing in gardens and cultivated fields about the City of Mexico, as though it were cultivated both for its flowers and for its edible bulbs. These descriptions, however, were so incomplete, that Linnæus was unable from them to place the plant systematically, and he made no mention of it in any of his works. In the

*T. PRINGLEI, Watson, n. sp. Bulbs small, with fusiform roots; stem slender, one or two feet high, bearing two or three winged-plicate leaves and a single flower; spathe-bracts three inches long, inclosing the peduncle; perianth with a campanulate base, blotched within with crimson, the sepals two and a half inches long, with a reflexed scarlet limb; petals broadly cordate or reniform at base, the narrower triangular-ovate, acute limb not spotted; staminal column one and a half inches long, the stamens five to seven lines long and equaling the style branches, which are cleft to the middle; capsule narrow, very obtusely angled, two or three inches long by three lines wide.

later years of his life he received many contributions from Dr. José Celestino Mutis, of Santa Fé de Bogota, especially of figures illustrating the flora of that region, and among them was included this species, which Mutis appears to have received from Mexico and to have cultivated in the botanic garden founded by him at Santa Fé. Upon the

the description by L'Obel, and on account of its brilliant, though fugitive, flowers, it has maintained its place in gardens ever since.

This species is the only one hitherto known belonging to the true *Tigridia* section of the genus, having large flowers and decurrent stigmas. Several forms are now to be found in cultivation, varying scarcely at all in the form and relative size of the parts of the flower, nor, I think, in the general character of the markings, but very greatly in the coloring. The section *Bealonia*, with much smaller flowers, and capitate or less distinctly decurrent stigmas, includes half a dozen species, natives of tropical Mexico, with one in Peru and Chili, and none of them common in cultivation.

T. Pringlei, which is the subject of Mr. Faxon's drawing for this number of GARDEN AND FOREST, is a recent discovery made by Mr. C. G. Pringle in the mountains of Chihuahua, much farther to the north than any other species has ever been found. As the figure shows, it is very closely related to *T. Pavonia*, and if color alone were to decide, it might be considered a variety of it, though differing markedly even in that respect from the old species. The base of the sepals is blotched (rather than spotted) with crimson, with a border of orange, the reflexed blade being of a bright scarlet-red. The petals have the base blotched and coarsely spotted with crimson, with a well defined, deeper-colored, brownish margin, the blade orange, tinged with scarlet, but not at all spotted as in *T. Pavonia*. The more essential difference is in the form of the petals, which have a broadly cordate or reniform base, with a much narrower, small, triangular-ovate, acute blade. The sepals also are smaller and more oblong in outline. In cultivation at Cambridge this season the bulbs commenced to bloom in July and continued to flower for several weeks.

S. W.

Cultural Department.

The Vegetable Garden.

SPINACH, Cauliflower, Brussels Sprouts, Celery, Lettuces and root crops will now form the bulk of our seasonable vegetables from out-of-doors, but where precautions against frost have been taken, we may still have Snap Beans, Tomatoes and Cucumbers. There has been frost in this neighborhood, but on account of our proximity to the sea, there was none here. Our vegetable supply is still unbroken. Evergreen and Squantum Corn sown June 26th are still yielding good ears; Cory and Early Marblehead sown July 19th and July 23d are just about fit for use. These last two kinds were planted for use in case the larger varieties did not continue tender till the end of the season, but so long as any of the first three can be had in fair condition, the extra early sorts are not wanted. On the 23d of July I sowed some Golden Tom Thumb Pop Corn, and the ears are now (October 1st) not only full, but the kernels are hard and the crop almost fit to gather. It matures more rapidly than any other that I have tried.

Snap Beans are still excellent. Mohawks sown August 9th are now in use, and Valentines sown the same time will be ready in a few days. Calico sheets are spread over these when frost is threatened. Snap Beans were sowed on August 13th, to be covered with frames and sashes about the end of September or just before frost. These sowings consisted of Earliest Red Valentine, Thorburn's Extra Early and Early Etampes. Both the Valentine and Thorburn's are now in bloom and podding nicely, but neither of them is yet fit for use; the Early Etampes, however, are not only in bloom, but a large number of pods are in excellent condition for the table. By banking around the frames with earth or manure and covering them over at night with mats or thatch, this Bean crop can be preserved in good condition well through October.

The Turnips now in use were sown August 10th; they are Purple Top, White Globe and Strap Leaf, and are about two inches in diameter, tender and solid. Old or overgrown Turnips are very poor vegetables. As Turnips will have good growing weather till November, many of these sown August 10th will be too big for keeping over winter, but others, sown a fortnight later, will be better for winter use. The Turnip



Fig. 61.—*Tigridia Pringlei*.—See page 388.

data thus furnished, the younger Linnæus referred it to the south African genus, *Ferraria*, and published it in 1781 as *F. Pavonia*. The genus *Tigridia* was founded upon it by Jussieu in 1789. It was soon after introduced into England, where it first bloomed in 1796, just 220 years after

Beets, namely Egyptian and Eclipse, now in use, were sown July 18th, and the same sorts, sown July 27th, are also fit for use. But Long Blood Beets sown July 27th are not yet fit for pulling; they need a longer season of growth.

Water and Musk Melons, Cucumbers and Squashes are now past bearing and should be cleared off the ground. As soon as Corn, Tomatoes and Snap Beans have been bitten by frost, they, too, should be cleared off the ground. Limas are very tender. Where they have been grown thickly together it often happens that while the tops get frozen, many fresh leaves and young Beans along the stems escape unhurt; in such cases it may be well to let them alone till they are cut down by a more severe frost.

Celery has grown finely this season; the recent cold weather has suited it exactly, but, until the last week of September, we could hardly get dry weather enough to permit the earthing up of the crop, and to bank it up while it is wet causes it to rust and rot.

Frame crops now demand attention. It is useless to sow Radishes out-of-doors or in cold frames after this time of year. We must raise them in hot-beds or in a green-house. Wood's Early Frame, French Breakfast and Early Red Turnip are capital sorts. Snap Beans, Tomatoes and Cucumbers here have been covered with frames and sashes, and in the event of cold nights, mats or thatch will be spread over the glass. Some earth or manure has been banked up against the frames to help keep them warm. A few weeks hence these frames and sashes will be at liberty for use in covering Spinach and Cauliflower. Fill up all spare frames with Lettuces, keeping the large plants in frames by themselves and the small ones by themselves. But be careful at this time of year not to keep frame crops close and warm, else they will perish during severe weather in winter. A temperature which just escapes frost is the best for large Lettuces, and a few degrees of frost will do no harm to small Lettuces, Parsley or Cabbage plants.

Glen Cove, N. Y.

Wm. Falconer.

The Flower Garden.

IT often happens that after our first frost some bright, warm weather comes, and Dahlias bloom out again quite generously. But after tender plants are sharply nipped their partially recuperated beauty seldom compensates for their ungainly appearance, and it is often better to clear them away at once. Bulbous and tuberous rooted plants should be cut over close to the ground, and brought indoors and stored away for the winter, each kind according to its nature. The ordinary Cannas when lifted may be shaken free from earth and stored, one deep, on a shelf or floor in a dry, frost-proof cellar or shed, or under a green-house bench, but the finer kinds, as Ehemanni, should be placed on a moist earthen floor or planted in earth in a green-house or warm frame—anywhere where they may be kept growing. Dahlias may be treated as common Cannas. Montbrietias may be lifted and kept dry over winter after the fashion of other bulbs, but it is better to keep the roots in moist earth, either in pots or boxes, or planted out in benches or frames. Green-leaved Caladiums live well enough when wintered in the same way as Dahlias, only it is unsafe to keep them in a temperature lower than 45°. Tuberoses should be kept dry and warm; but Mr. Michels, of St. Louis, has found that the new Albino Tuberoses must be kept growing in winter in the same way as Ehemann's Canna. Last winter he lost three-fourths of those he dried off in the usual way. Tigridias should be tied in bunches and hung in a shed for some days, sometimes weeks, and then the bulbs, with stems stripped off, should be stored on shelves; but in all cases preserve them from frost, also from rats, which are very fond of them. Rats are also very fond of the tubers of the fancy-leaved Caladiums. Young bulbs of *Galtonia (Hyacinthus) candicans* are hardy enough, but old bulbs rot in the ground in winter. But as lifting and saving them indoors over winter are very little trouble, it is the safer plan to practice. Gladioli should be treated like Tigridias; but all the bulblets about the base of the large bulbs should be saved. These bulblets, sown next spring in drills about twelve or fifteen inches apart, and as thick as dwarf Peas, will, most of them, bloom when two years old. *Bessera elegans* may be relieved at once of its leaves and stem and the bulbs wintered in paper bags or on shelves. *Milla biflora* may be treated in the same way, except that it does not keep as well in a dry state as in slightly moist earth. Of these last two bulbs and of *Cyclobothra flava* there is likely to be a scarcity in the market, owing to some trouble at the source of supply in Mexico. *Ismene calathina* and Amaryllises may be lifted and kept dry

over winter, or in slightly moist earth or sand; in a temperature of over 45°. Tuberous Ipomæas, Erythrina roots and Daturas that have been grown and flowered in summer, may now be shortened back and kept dry over winter, or, better yet, in moist earth, or laid on an earthen floor.

G. C.

Silenes.—Among these are pretty perennials, biennials and annuals; nearly all are hardy, easy of culture, and excellent plants for the rock-garden. A soil composed of loam, peat and sand is most favorable for their growth. They will not thrive in heavy soil or in the shade. They can be propagated by seeds, division or by cuttings. *S. acaulis* forms a neat evergreen cushion, with white flowers. *S. alpestris* grows about six inches high, and its white flowers are borne in abundance. *S. Elizabethæ* is a rare and beautiful species, rather tender, with large, deep rose-colored flowers. *S. Hookeri* has large pink flowers, two inches or more in diameter. Coming from California, it is not hardy here. *S. maritima, fl. pl.*, is a very free-flowering, double white variety, like the type in every other way. It is a neat trailer, its handsome, glaucous-green foliage clothing the stones completely. *S. pendula, var. compacta*, is the variety so much used in England for spring bedding. It is most effective when planted amongst yellow Tulips or blue Hyacinths. *S. Pennsylvanica* is a common native, but very pretty species. *S. Schafta* flowers at a season of the year when all other Silenes are past. A mass of it in the rock-garden here was strikingly beautiful in late August. It is one of the best, and although it winter-killed with me in New Jersey, it proves quite hardy here. The flowers are a lovely pink-purple. *S. Virginica*, the Fire Pink, is one of the most striking, and one of the few hardy plants with clear scarlet flowers.

T. D. Hatfield.

Wellesley, Mass.

Rose Cuttings.—It is now claimed that blind wood of Roses, if made into cuttings, will produce equally floriferous plants with those made from flowering shoots of the same varieties, and, judging from some extended tests made by good growers, this seems to be an established fact. This view is exactly opposite to that held by many growers in former years, and though contrary to the traditions of the trade, yet it seems to be quite reasonable. When blind shoots are used for this purpose, they should be clean, healthy pieces, such as are frequently produced by Catherine Mermet, The Bride and other varieties during the winter; for, though both of the above-mentioned Roses are very free in regard to bloom, they also make a considerable amount of non-flowering wood in a season, and this growth, when in a healthy condition, makes a desirable addition to the cutting-bench. There are some conservative growers who still prefer to make cuttings only from shoots which have produced flowers, but it frequently happens that some difficulty is found in procuring enough wood of this class at the time when it is wanted most, and therefore it is advisable to put in all the healthy wood at command, as weak or sickly plants can easily be discarded if any such are found at the time of planting. And when it is thought desirable to have a stock of young Roses for early sales, or for summer use, it will be found best to commence putting in cuttings as soon as they can be obtained in the fall; for instance, in October or November, or earlier if suitable wood is to be had without injury to the crop, because plants struck at this time, and shifted on as it becomes necessary, will be in good condition for early planting the following season. Of course these remarks will be understood to apply especially to Roses of the Tea class, such as are used for forcing.

Philadelphia.

W. —.

Gladiolus-flowered Cannas.—We quote the following from *The Garden*, London, in addition to what was said last week concerning these plants, because we believe they have a most promising future:

"This very expressive name has been given to a new class of Cannas conspicuous for the beauty of their flowers, which much resemble those of a Gladiolus in form and size. Hitherto, with a few exceptions, the Cannas have been grown more for the beauty of their foliage, which imparts to them a very dignified aspect, and is, moreover, quite distinct. Usually, plants which are grown for beauty of foliage alone, do not produce very striking flowers, and it has been so for many years with the Cannas, but these new varieties, which are of French origin, show evidence of a rapid and marked improvement, which probably will continue, and we may shortly look for something quite



Fig. 62.—*Pinus ponderosa pendula*, at Wodenethe.—See page 392.

startling in this direction. We recently noted some in flower at Tottenham, especially good being Victor Hugo, a variety with dark leaves, and large, bright red flowers, equal in size to those of Canna Ehmanni, and Edourd André, with flowers of a deeper red, but quite as large; Queen Victoria, with spotted

yellow flowers, was also good. The Cannas do not receive half the attention they deserve. Where their culture is practicable, they are most effective in the open air in summer, and serve an admirable purpose by carrying the eye gradually upwards from the dwarfer subjects usually employed in the

embellishment of the flower garden to the taller forms of tree and shrub life. They will also be found very useful when grown as specimens in pots for conservatory decoration, and, by reason of the hardiness and texture of the foliage, their beauty and freshness last a long time. We owe all the best of our Cannas to the French, and it is to be hoped they will continue in their good work of improvement, and give us some varieties that, for beauty of flower, will eclipse anything previously seen. The varieties above referred to amply show the capability of improvement."

Plant Notes.

The Weeping *Pinus ponderosa*.

THE illustration upon page 391 represents one of the most interesting coniferous trees which can be found in the Eastern States. It is a specimen, and the only specimen which is known, of the well known Yellow Pine of the Pacific forests (*Pinus ponderosa*), in which all the branches have assumed a decided and permanent weeping habit, giving to this individual a grace of outline quite unknown to the Yellow Pine in its normal form. This tree, with a number of others, was imported from the Knap Hill Nurseries in England in 1851, when only a few inches high, and planted by Mr. Henry Winthrop Sargent in his garden at Wodenethe, in Fishkill-on-Hudson, in this State. It is now fifty-nine feet in height, with a trunk diameter, three feet from the ground, of twenty-one and a half inches, and it is still growing rapidly. The origin of the seed from which this tree was raised is unknown, although it no doubt came from Oregon or California, as the seeds of trees were not collected on the mountains of Colorado until several years after this Pine had been planted on the banks of the Hudson. Its perfect hardiness, therefore, must be taken as an exception to the now generally acknowledged fact that the Conifers of the Pacific-coast region are unable to support, for any length of time, the climate of the northern Atlantic States.

But the real interest in this tree is not found in its graceful and unusual habit, or in its hardiness, but in the fact that it was planted and beloved by the man to whom, more than to any other, Americans owe their knowledge of cultivated trees, and who, for nearly half a century, devoted himself, with an energy and enthusiasm which no disappointment ever dulled, to experiments in tree culture. The friend and pupil of Downing, he extended the fame of his master, and by his example, his precepts and advice inspired what is best in American gardening of to-day. This pine may well serve to keep green the memory of Henry Winthrop Sargent, and to remind the present generation how much it owes to his disinterested labors in their behalf.

A picture of this tree was published in the *Gardeners' Chronicle*, of London, August 24th, 1878, from a photograph taken in that year. Our illustration is from a recent photograph by Mrs. Winthrop Sargent, to whom we are indebted for its use. C. S. S.

Origin of the Le Conte Pear.

AT page 268 of the Report of the United States Agricultural Department for 1886 Mr. John L. Harden, of Walthourville, Ga., makes the following statement in regard to the origin of this Pear:

"Major John Le Conte, of New York City (and afterwards of Philadelphia), in the year 1850 had a number of fruit trees and other plants put up for his niece (Mrs. J. L. C. Harden, my mother), of Liberty County, Ga., at a nursery in New York or Philadelphia (most probably New York), and among them was a rooted cutting of what was marked 'Chinese Sand Pear.' Major Le Conte was informed by the proprietor of the nursery that the Pear was only fit for preserving, as it never matured in this country. Contrary, however, to expectation, it matured in Liberty County, and proved to be a fine, productive Pear. The original tree is now owned by my mother's heirs, and is still vigorous, although not cultivated in any way, and produces from ten to twenty bushels each year."

This statement enables me to clear up the mystery of its

origin. Some six or seven years previous to 1850 my brother, Mr. Thomas Hogg, obtained from Messrs. Potter Bros., of Providence, R. I., a plant of *Pyrus sinensis*, the Chinese Sand Pear, or Snow Pear, as it is called by some. This plant was grafted on a stock of *Pyrus communis*, our common Pear. It was planted out in the nursery at Yorkville in a plot of ground devoted to testing new varieties of fruit trees, and was surrounded by a number of Pear trees of different varieties. In due course of time the tree fruited, and from the seeds thus obtained young trees were grown, one of which was given to Major Le Conte, and is no doubt the tree noticed by Mr. Harden. It is doubtless a hybrid, produced by the pollination of a flower of the Sand Pear with the pollen of some one of the surrounding Pear trees. I remember that there was one tree near by with fruit very much the shape and size of the Le Conte, but I cannot recall its name. The Sand Pear tree we had bore large, apple-shaped fruit, the stalk being deeply inserted, of a deep orange color, somewhat russeted and thickly studded with raised brown dots. The skin felt as though sanded over by these dots. Otherwise the fruit was very handsome to look at. Dorr and Dr. Lindley describe the fruit of the Sand Pear as warty, bony and gritty, but the fruit of our tree was in no wise warty or bony, being only gritty. It was not edible, but made a fairly good preserve, and always ripened its fruit. Mr. Harden is mistaken in saying that Major Le Conte was told that it would not ripen its fruit.

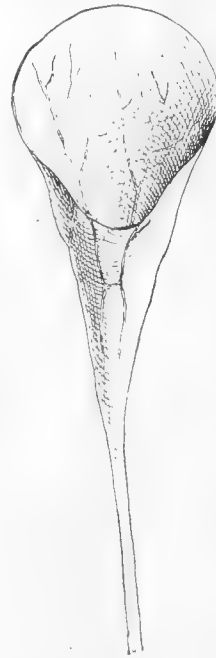


Fig. 63.—Malformed Cabbage Leaf.

My opinion is that our climate, or its being grafted on a common Pear stock, had something to do with ameliorating the character of the tree we had, and rendered it more susceptible of hybridization. It is a very unusual instance of the effects of hybridization, as the product is so very unlike the mother tree, that if the latter were not known there would be great doubts as to its being one of the parents, judging by the fruits.

I may add that the Sand Pear is quite an ornamental tree. It has long shoots of a greenish, changing to purple, color, thickly dotted with white spots; large, lucid, almost evergreen leaves; and large white flowers slightly tinged with pink. James Hogg.

Tubular Cabbage Leaves.

THE interesting monstrosity of Cabbage leaf described and illustrated in GARDEN AND FOREST, p. 296, is essentially the same, evidently, as the *Brassica oleracea, costata Nepenthiformis* described and figured by the elder De Candolle in *Trans. Lond. Hort. Soc.*, v. 12. A monstrosity of similar character, but involving the whole first true leaf of a Cauliflower plant, was observed by the writer this year. It is here figured. L. H. Bailey.

The Forest.

Forestry in California.—III.

FOREST economy is slow in its returns, a new growth for timber requiring many years, which is discouraging to short-lived man; consequently, men cut forests for commercial purposes, but it is rare, indeed, that a forest is ever planted. So also much of forested land in new countries must be cleared as population increases, irrespective of the demands of commerce and whether the result be health or sickness.

But there is a point, variable according to the climate and topography, beyond which the destruction of forests diminishes the capacity of the country to support population, and, while at first increasing the arable area, in the end diminishes this through the action of torrents in washing the soil from some places and covering others with sand and bowlders, while at the same time the whole country becomes more exposed to extremes of flood and drought and the climate more variable and unfavorable to agriculture, the winds stronger and the springs less reliable and often extinguished.

It is by educating the people in these truths of the effects of excessive and unwise forest destruction that we must hope to

save our forests. The time has come for this intelligent American people to follow the lead of France, Germany, Austria and the civilized powers of the world in averting, by timely measures, a great disaster. I shall now briefly set forth the manner in which the beneficial effects of forests in agriculture are produced.

The normal evaporation from bare land is much in excess of that from lands in woods. An experiment made with two jars of equal size, covered with wire gauze to protect them from flies and insects, one set under a bush and the other in a place sixty feet from the surrounding trees, but thus protected from wind, showed the evaporation in the open to be more than double that under the bush, the exact figures being: bush jar, .863 evaporation; jar in the open, 1.854.

Mr. W. Blore, who made this experiment, calculated that, in the 102 days of average dry season at the Cape of Good Hope, the excess of the evaporation from a burned or bare district over a bush or forest covered one would be 384,000 gallons per acre, or 384,000,000 gallons for a thousand acres.

Other experiments in England show that the evaporation from an open vessel in a room is eight inches in a year, while in a field or open place it is estimated at between thirty and forty inches. The soil in a forest being protected by the trees to a certain extent, and thus under cover, we may infer that evaporation would be less under such conditions than in an exposed place. It is a matter of common observation that roads running alternately through woods and open country remain longest moist in the woods. Railroad cuts show the same difference; houses in forests are damper than those in the open. These facts go to show that evaporation from the soil is slower in a forest than elsewhere. The only exception to this is where water is in excess. The evaporation activity of the trees is then excited to such an extent as to neutralize their protective effect upon the moisture in the soil itself. Thus trees in a swamp have a draining effect, while upon dry soil they will maintain humidity.

Nothing is better authenticated, both by scientific and general observation, than this last effect. In California we have learned to help the soil and maintain moisture by making the soil a mulch for itself by cultivation, that is, by keeping the surface pulverized. But this artificial process is unprofitable upon the steep mountain sides, where our forests are of most importance. Such an attempt would only result in the washing away of what soil there is on the mountains. In this connection it may be well to note the value of thorough cultivation. The driest soil contains thirteen per cent. of moisture. Schubler's experiments show that soil that weighs about a thousand tons per acre, when thoroughly pulverized and completely dried, will absorb from the atmosphere in twenty-four hours:

Sandy clay,	- - -	Twenty-six tons of water.
Loamy "	- - -	Thirty " " "
Stiff "	- - -	Thirty-six " " "
Garden mould,	- - -	Forty-five " " "

We are all familiar with the absorptive capacity of common salt. Carbonate of potash has also notable affinity for moisture, but it is the humus of the forest that possesses this power more than any other soil, absorbing to again give off from two to four times its weight in water. Forests mulch the ground under them. It therefore becomes plain, that forest fires, when not destructive to the trees, diminish the capacity of the forest for retaining moisture. The trees also protect the earth under them from the heat of the sun. Soil in the open is raised in temperature by the sun at a depth of one foot, fifteen degrees more than in a forest; consequently, the abstraction of moisture is correspondingly larger in the open. The difference is as 130 to 1,000 in favor of the forest. On the other hand, the experiments cited by Marsh show that in winter soil has been frozen to a depth of six feet on a bare knoll, while in the adjoining forest the soil was uniformly above the freezing point. This is most important in California in our high mountains, for rains upon frozen ground must run off without penetrating. So bare places would not act as reservoirs for later use, while the forested land would. Forests protecting land from excessive heat, protect the snows from rapid melting. The last place from which snow disappears, at the same elevation and isothermal line, is the forest. To the irrigators of parts of central and southern California this is of great importance, for, with the forests, the snow water of spring and early summer is long maintained, while without them the melting of the snow must be more sudden and the water resulting from it flow off in floods, so it is dissipated and the life-giving water is gone when most needed.

Another effect of forest action is that the snows in them

melt from the ground side most and thus can reach the conduits that supply the springs, while snow upon frozen ground melts from above and runs off rapidly. The desiccating effect of winds is often great. Our dry winds in this State do much damage to fruit trees and dry the grain in the milk, diminishing the crop. Forests have a modifying influence upon such winds. In fact, a dry wind cannot originate in a frosted country, and, as it passes over forests, is diminished in intensity; even a belt of trees will have a pronounced protective influence on crops and trees to leeward of them and for some distance to windward also, for the trees bank up the air on this side, as is known by hunters, who, in striking a light, place the shelter of their hand on the lee side, having the light in the direction from which the wind comes.

Trees protecting the ground from the rapid radiation of heat, prevalent in bare places, diminish frosts. Thus a plant under shelter of a tree is less likely to be frozen than if it were in the open; but trees protect in this respect in another way. Megucher's experiments in Lombardy show that trees, like animals, maintain a constant temperature, that is somewhat modified, doubtless, as it is in animals, by hibernation. This temperature for trees is fifty-four degrees; forests in a country, therefore, have a similar effect to the sea. They maintain a more even degree of humidity and of temperature and equalize the climate.

The deposit of dew is more copious upon vegetation than it is upon the soil. Experiments show the difference to be more than double; the exact figures are: for grass, 4.75; for a white surface, 2.00.

In walking through grass or bushes after a dew the moisture will be apparent as compared to bare land. Fogs and mists are to a considerable extent condensed by the foliage of bushes and trees, and drip from them to the ground. On misty mornings I have frequently been wet through when walking in the chapparal of the Sierra Madres, while on the bare hillsides no moisture was visible. At Santa Monica where I spend the summer, on foggy days the trees may be observed to drip with water, and in thick fogs the drip is so continuous as to suggest rain as it drops on the fallen leaves.

Santa Monica, Cal.

Abbot Kinney.

Correspondence.

Forest Planting in New England.

To the Editor of GARDEN AND FOREST:

Sir.—I have on a farm here some acres of land affording but poor pasturage, some of which is grown to bushes and some little clear land formerly devoted to grass. I have been led by GARDEN AND FOREST to consider the advisability of devoting the land to forest plantations of Ash, Chestnut or White Pine. If I am not trespassing too much on your time and kindness, will you please tell me what books or publications would be of service to me in learning the best method of planting and the result of experiments made in the planting of forests in New England.

My land differs from the sandy soil of the Cape, where I think successful experiments have been made, in being stronger and of a kind considered good grass land. Whom would you recommend as an expert in the matter?

Truly yours,

William Simes.

Petersham, Mass.

[There is no American Manual of Arboriculture, and the foreign works upon this subject, based upon conditions dissimilar to those which prevail in this country, have little practical value here. The general principles of tree planting, however, applicable to the United States as well as to Europe, will be found in "The Forester," by James Brown, published in Edinburgh, 1882, and in "Arboriculture," by John Grigor, Edinburgh, 1868. There are papers relating to tree planting in Massachusetts, in the Reports of the Secretary of the State Board of Agriculture of that State for 1875, 1878, 1882 and 1885, and there is much information upon this subject, valuable and otherwise, scattered through the reports of Agricultural Societies and Boards of Agriculture of almost all the Northern and Western States. The most interesting plantations of forest trees made in Massachusetts are those of White Pine in Middleborough, Raynham and Bridgewater, of which an account will be found in the Transactions of the Massachusetts Horticultural Society for 1885; the Pitch Pine plantations in Orleans and in other towns on Cape Cod, of which a description will be found

in the report of the Connecticut State Board of Agriculture for 1877-78; the large plantations of foreign trees principally Larches, Norway Spruces, Scotch Pines, Oaks and Birches, made by the late Richard S. Fay, near Lynn, and by Mr. Joseph S. Fay, at Wood's Holl. There is also an instructive plantation of European Larches on Mr. J. D. W. French's farm in North Andover, which was described in the first issue of this journal; and in East Greenwich, Rhode Island, large plantations of Larch and White Pine have been made during the last ten years upon the farm of Mr. H. G. Russell, where these trees have made a satisfactory growth upon sterile and apparently barren land. Land which is strong enough to grow good white ash is too good for pine, which will grow to a large size on dry, gravelly ridges. The land which our correspondent describes would probably grow either chestnut or hickory, both valuable woods, for which there is an active and increasing demand. Chestnut and Hickory trees can be raised by planting the seed where the trees are to remain, and are, therefore, more cheaply raised than Ash or White Pine, which must be transplanted from the nursery. If the land in question is fenced, so that animals can be kept off of it, and planted in the spring with chestnuts and hickory nuts, it will be covered in a few years with these trees, and many others, which will spring up spontaneously in great variety, as soon as cattle are kept out. The nuts for planting should be gathered as soon as ripe and at once mixed with sand to prevent them from drying, as drying destroys their power to germinate, and stored in a cellar from which the frost is excluded. In the spring, when the frost is out of the ground, a man can plant the nuts very rapidly by making a hole about an inch deep, or a little deeper for large nuts, with an ordinary walking-stick, dropping a nut into the hole and then pressing down the soil over it with his foot. The nuts should be planted three or four feet apart, but when the ground is very rough and rocky, they will have to be put in without regard to exact distances and wherever the best soil can be found.

There is no man in the United States who has had a longer and more varied experience in tree planting than Mr. Robert Douglas, of Waukegan, Illinois, and his advice in such matters can be adopted in perfect confidence.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—Black Walnut is not native north of Niagara, but has been raised and produces nuts as far as Quebec. Will the wood of this or any other tree be likely to prove sufficiently sound for manufacturing purposes when grown north of its proper habitat? There is no experience in Canada to show this.

Norwood, Canada.

T. M. Grover.

[Trees can generally be induced to grow in cultivation much further north—that is, in a colder climate—than that in which they are found growing spontaneously, and when the change is not too great they may produce sound timber. The continental distribution of plants being regulated, to a large extent, by temperature and moisture, the fact that any tree, like the Black Walnut, for example, is not found growing spontaneously north of a certain latitude, shows that this is the limit where, unaided by man, this particular tree has been able to maintain itself in the struggle for existence, which is constantly going on between all organized beings; and that if moved beyond that limit and deprived of man's constant assistance, it will be in great danger of being compelled to succumb, sooner or later, to unfavorable conditions. For this reason it is wise to select the native trees of any region to plant for timber in that region. It is impossible to predict that any others will reach maturity and produce valuable material.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—It gives me pleasure to note that GARDEN AND FOREST constantly advocates the use of more natural forms in the ar-

range of plants for the embellishment of public and private grounds. Such articles as that on the planting of hardy bulbs in the grass cannot fail to bear good fruit. How many barren spots there are that need such a brightening up at spring-time as only a few Daffodils can give them. And why should not some of our native hardy plants be used in such places; for instance, the Blood-root, Dicentra or Hepatica, and for later blooming the Columbine, Mandrake, Meadow Lilies, Golden-rod and Asters. I have found that these wild beauties easily adapt themselves to a place seemingly most unfavorable for their life and growth, so I can easily imagine what might be accomplished were they distributed over larger grounds. The woods are not always easy of access, but we can bring a bit of them close to our homes.

I have noticed at Kew what might be termed a perpetual garden, which your readers might easily imitate, or even improve upon, by making a still bolder departure from the conventional. There is a serpentine walk, lined on either side by banks of rock-work four or five feet high. These are planted with English hardy plants as well as Lilies and other bulbs, and many of those that come under the general head of alpine plants. They are scattered about quite naturally, and are so arranged that there is an abundance of bloom throughout the season. To those possessing rocky grounds this suggests unlimited possibilities in the formation of a natural garden of great beauty, and one that offers a large return for a very little labor.

Brooklyn, N. Y.

H. S. A.

To the Editor of GARDEN AND FOREST :

Sir.—In an interesting article on "Cultivation of Native Ferns," by Robert T. Jackson, in your journal of the 5th inst., some examples are given of "the extreme hardness and vitality of Ferns," to which I can add a perhaps still more remarkable illustration.

About ten years ago a lady living in New Zealand sent me, by mail, covered with a piece of brown wrapping-paper and tied with a string, six roots of New Zealand Ferns. When I received them here in California they were, of course, absolutely dry and apparently absolutely dead; but wishing to test the matter, I poured some tincture of gum camphor into warm water and sprinkled the Ferns with the mixture, leaving them lying upon wet moss for twenty-four hours, after which I planted them in pots. One plant of *Pellaea falcata* commenced to throw up new fronds in a few days after its receipt, and is still growing in my conservatory. I do not remember how much time was occupied in the transit, but I think it was about three months, as the facilities for rapid communication by mail in those days were greatly inferior to those of the present time.

Santa Barbara, California, September, 1888.

Lorenzo G. Yates.

Periodical Literature.

The leading article in *The Cosmopolitan* for August is Mrs. S. B. Herrick's on "The Romance of Roses." The author's aim has been to trace the continuance and explain the strength of that preference for the Rose above all other flowers which has distinguished every people to whom it has been well known; and, together with a great deal of romance, she gives us many interesting facts. The most interesting are perhaps those which reveal the use the Romans of the Empire made of Roses—a use which makes our utmost extravagance seem positive parsimony. When we read of floors carpeted with fresh Roses a foot deep, covered with a fine netting that the guests might walk upon without disturbing them; of a single feast given by Nero, when a sum equivalent to \$100,000 was spent for the Roses alone; of water parties at Baïæ, where "the whole lake of Lucina was covered with Roses, which parted before the moving boats and closed after them as they passed;" of Lucius Verus sleeping upon cushions of net stuffed with freshly-gathered Rose-leaves, and of Heliogabalus demanding that his couches, beds, floors, and even porticoes, should be kept perpetually covered with them—how can we think that we are extravagant in our use of Roses? At first the Roses required in Rome were imported from Egypt, but later on a sufficient supply seems to have been grown in Italy, where, according to Ovid, they were made to bloom twice a year by means of hot water, carried, as other writers explain, in pipes, much after the manner of to-day. The love of mediæval ages for the Rose has become proverbial, and it expressed itself in many court as well as popular customs. For centuries before the reign of Louis XIII. the peers and dukes of France, and even the King of Navarre, were obliged to present Roses, in their season, to the Parliament of France

as a symbol of the suzerainty of the King; and the right to represent them at this ceremony was eagerly disputed for among the highest nobles of the realm. Similar tributes were frequently exacted by minor suzerains, and even in real estate transactions a Rose, or a bushel of Roses, often appeared as part of the payment or an equivalent therefor. The Golden Rose, which the Pope still annually bestows upon some one whom he desires to honor, was first given in 1366. The form of the present was chosen as significant of the fragility and evanescence of life, and the indestructible, incorruptible material as emblematic of the immortality of the soul. At least, Mrs. Herrick tells us, ancient writers thus declare; and, whether it be accurate or not, the explanation is a poetical one. The drawings by the author, which accompany this article, are both faithful and poetic; the others are less good, and the colored plates are beneath criticism.

Blackwood's Magazine for August contains an interesting article called "In a Garden of John Evelyn's" which unites a sketch of Evelyn's life with a description of the garden which he assisted in laying out for a friend—one of the Howard family, who afterwards became the Duke of Norfolk. This garden lies at Chertsey, in Sussex, about thirty miles from London, and in the neighborhood of Wotton, Evelyn's old home. As Pope and Addison worked in the eighteenth century, so Evelyn worked in the seventeenth, and still more influentially, to popularize a love of nature among his countrymen. Pope's and Addison's efforts tended to turn men away from the formal towards the natural style of gardening. In Evelyn's earlier time, landscape gardening, in the meaning we now attach to the word, had not as yet been thought of. Nevertheless the truest love for nature and the most admirable taste characterize all his works on gardening, and the formal gardens which he loved are by no means to be confounded with those which, later in his own century, were mere arrangements of clipped trees and regular walks crowded with a mass of artificial constructions. His taste had been trained, during many years of foreign travel, on the beautiful early gardens of Italy, and something akin to them he tried to produce in England, with a wise regard, however, for differences in climate, habits of life and artistic conditions. The garden at Chertsey is said to be better preserved than most others of its time, and the description given of it in *Blackwood* is certainly most attractive. "It is perhaps an ancient pleasure more than a garden such as belongs to the present day. . . . The growth of years has but added to its charm, and has produced the grandeur of the trees, which must be the chief attraction to a pilgrim to the shrine of 'Sylva Evelyn.' . . . There is as much shade as sunshine around us here. . . . Few signs of modern taste have entered; 'bedding out' and those monsters of horticulture known as *massifs* are unknown. There is not a single ribbon-border anywhere, nor beds of tropical plants. . . . Here is a space set apart for a rose-garden, and the Roses have had their way in it for years. Trellised arbours lead to it, and the entrance is darkened by overhanging clusters. Below the rose-garden the ground slopes to the margin of the stream. . . . There are thickets along the stream and many a winding walk below tall trees and all kinds of flowering shrubs overhanging the stream. We notice fewer brilliant effects than tender colors and sweet scents, except at intervals, where great scarlet Poppies flaunt in the sun, contrasting with yellow Day Lilies, or spires of blue Lupin or white masses of golden Crocus catch the sunshine in early spring. And here and there among their more cultivated sisters there is space for a wild flower to find shelter. . . . Here is a group of Ilex trees, whose shadow falls upon some old brick-work, and flights of stone steps which lead up to the chief attraction and crowning feature of the garden, a broad, grassy terrace, stretching in long perspective for a quarter of a mile. Half way down its length is a semicircular recess and a pool of clearest water covered with Water Lilies and dark with overhanging trees, which hide the entrance to the grotto; . . . and rising over all the splendid group of Firs. . . . On the old walls which bound the terrace on the left there is a delicious mingling of fruit and flowers. . . ."

Recent Plant Portraits.

ONCIDIUM LIETZEI, var. AUREO-MACULATUM. *Gartenflora*, August 15th.

PLAGIANTHUS LYALLI. *Gardeners' Chronicle*, August 25th; a malvaceous shrub or low tree, with handsome white flowers three-fourths of an inch across. This will probably make an

interesting and valuable addition to the list of hardy shrubs which can be cultivated in gardens in our Southern States.

SCHOMBURGKIA TIBICINIS. *Gardeners' Chronicle*, August 25th. *Botanical Magazine*, September:

SPATHOGLOTTIS VIEILLARDI, t. 7,013; native of the Sunda Archipelago and New Caledonia; a robust species, with handsome pale lilac, or nearly white, flowers, two inches across.

Caraguata Andreana, t. 7,014; native of New Grenada; is a showy Bromeliad, discovered by Monsieur Ed. André on the Cordillera of Pasto during his memorable South American journey, and introduced by him into cultivation.

Masdevallia Mooreana, t. 7,015.

NARCISSUS BROUSSONNETII, t. 7,016; "this is a very curious plant. It is just like the white Tazetta Narcissi (*Italicus*, *Panizzianus*, etc.) in habit, leaves, perianth, stamens and pistil, but the corona is very nearly or entirely obliterated. It was carefully studied by the late Jacques Gay, one of the most painstaking botanists who ever lived, and his conclusion was that it ought to be regarded as forming a monotypic genus. It was first found about the beginning of the century in the neighborhood of Mogadore by Broussonnet. Nothing more was heard of it until 1873, when specimens were sent by Dr. Leared to the late Daniel Hanbury. Now it has been introduced alive, and was flowered last winter both at Kew and by Sir E. G. Soder at Flone. It will probably not prove hardy in the open air in England."

ERYTHRONIUM HENDERSONI, t. 7,017, recently described and figured in this journal (p. 317).

Exhibitions.

The Pennsylvania Horticultural Society.

THE fifty-ninth annual exhibition of this society, held in Philadelphia last week, was not as large as some of its predecessors, but for the number of remarkable specimens displayed the show has not been surpassed for several years. Probably the finest plant in the hall was a *Kentia Forsteriana*, exhibited by Wm. Joyce, gardener to Miss Baldwin. Its foliage is very clean and bright and the plant is fully twelve feet high. Specimen plants of *Latania Borbonica*, *Cycas circinalis* and *Pandanus Veitchii* followed hard after this in the order of merit. A remarkable *Cissus discolor*, covering an oval frame four feet high, well furnished with foliage, some of the leaves measuring quite nine inches long, was exhibited by Robert Wark, gardener to C. H. Clark. An *Alamanda Schottii*, also grown on a frame and well set with flowers and buds, showed blooms quite four and a half inches in diameter. It was exhibited by Wm. Frederick, gardener to W. W. Frazier, of Jenkintown. Thomas Long, gardener to A. J. Drexel, exhibited a well-grown specimen of that miniature Palm, *Livingstonia Altissima*, and its beauty made visitors regret that it was so scarce and costly. A specimen of *Cocos Weddelliana*, exhibited by Mr. Joyce, is six feet high and in fine condition. Chas. Ball contributed a well-colored plant of the variegated Pineapple. Three fine plants were shown of *Davallia Fijensis*, a Fern that was grown by a Philadelphia florist for ten years before it was named and distributed by Wm. Bull. It was sent to the Philadelphian by a friend who visited the Fiji Islands.

The collection of fifty Caladiums from "Wootton," the country-seat of Geo. W. Childs, were fine examples of good culture. John M. Hughes, the gardener to Mr. Childs, deserves great credit for this display, as it occupied nearly one side of the hall. Hugh Graham's son received a first premium for six fine specimen plants of Maranta, and Chas. D. Ball took first for a grand collection of twenty-five specimen Ferns, including the finest Adiantums, Davallias and Gleichenias.

Henry A. Dreer exhibited *Aristolochia elegans*, a novelty from Brazil. It is a grand vine and certain to become popular, if, as is claimed, it will bloom the same season from seed sown in the open air in spring. Mr. Dreer also exhibited the finest collection of tuberous-rooted Begonias ever seen in Philadelphia. Many of the flowers measured four and one-half inches in diameter.

The tank of Water-lilies contained examples of *Nymphaea Zanzibarensis*, *N. Devonensis* and *Nelumbium speciosum*, and a smaller tank was filled with the comparatively new *Pontederia Crassipes*, from British Guiana, with blooms resembling at first sight a pale blue Iris. Cut Roses of admirable quality for the season were exhibited by Edwin Lonsdale, Craig & Bro., Pennock Bros. and Coles & Whiteley. Some Madame Cuisins were particularly fine. The Gloxinias and Petunias exhibited by Henry A. Dreer and the daintily arranged Pansies

and single Dahlias by O. R. Kreinberg were well worth the attention they received.

The wild flowers collected by Allen Barr were well chosen, but they lost some of their educational value because they were not named.

The Cattleya El Dorado, which is a beautiful pink, was thought by many retail florists to be one of the most desirable for use in the arrangement of flowers. Pennock Bros. exhibited a large urn and Heron & Nesbit a vase of cut flowers, both of which received special premiums, and Miss Anna A. Bisset won the first prize for a cross and wreath. Archibald Lawson, gardener to H. H. Houston, Chestnut Hill, exhibited some very handsome grapes, the clusters of White Nice, Santa Cruz, Prince Albert and White Syrian being particularly fine.

The attendance was only "fair." It is strange that an exhibition as good as this should ever lack a generous attendance in any of our large cities. But the question how to make horticultural exhibitions meet expenses, is one that too many of our oldest and best societies are still compelled to consider.

H. H. Battles.

Notes.

Florida Persimmons are sold as a novelty by New York fruiterers for 60 cts. a dozen.

Autumn leaves from New Jersey thickets are tastefully combined by New York florists, and sold by the dozen or the cluster.

Dill and Fennel have never been brought in such quantities to the New York markets as they have this season. There is also an increased demand for Tarragon.

Mr. William Court, well known to many American horticulturists as an agent of the Veitch Nurseries, died suddenly of apoplexy, in London, on the 17th of last month.

The finest Crawford Peaches are now coming from Baltimore, where they have been kept back in cold storage-houses. They sell for \$4 a crate, and for 75 cts. and \$1 a dozen.

Mr. J. A. Lintner estimates that there are in the United States 1,000 species of insects which are injurious to fruits, and of these 210 are known to live at the expense of the Apple-tree.

For some reason trees and shrubs are later than usual in assuming their autumn colors, but for a week past *Berberis Thunbergii* and *B. Sinensis* have fairly glowed with the brightness of their orange and scarlet.

A Pearl River plantsman is bleaching the tops of Russia Turnips, which are a hot-house delicacy abroad, and which are prepared for the table much the same as Sea-kale. These and Cauliflower, also forced in hot-houses, will be in market about Christmas.

Professor James argues that it is quite as legitimate to expend Federal money to prevent the soil from flowing down mountain sides and filling up rivers as it is to expend money for clearing out their channels when once filled; and that it ought to be permissible to expend Federal money to protect the stream itself, if it be proper to stock and re-stock it with fish.

Juglans Manchurica is a most promising nut tree from Japan. A tree in the Arnold Arboretum, from seed planted in the fall of 1879, has this year borne two bushels of nuts. The fruit is larger, more nearly spherical and less rough than our common butternut and is of very good flavor. The nuts are borne in clusters with from six to thirteen together. The tree has borne now for five years, and, besides the valuable crop it yields, it gives good promise as an ornamental tree.

The *Tribune*, of San Luis Obispo County, California, reports some wonderful yields of Onions in the valley of the Arroyo Grande. The product of one acre was weighed, and amounted to 66,905 pounds, or more than thirty-three tons. This would be by measurement 1,194½ bushels. One of the Onions measured seventeen inches in circumference. A Radish in the same valley is said to have weighed thirteen pounds, being twenty-one inches in girth and thirty-eight inches long.

The report of Mr. J. H. Hart, the new superintendent of the Trinidad Botanic Garden, for the year 1887, has appeared. This is one of the richest, as it is the oldest, of the botanic gardens in the British West Indies, having been continuously maintained during a period of seventy years. Its usefulness is now likely to be greatly increased under Mr. Hart's management, which is first directed properly to the permanent establishment and arrangement of an herbarium, without which no botanic garden can be operated. The task is the more important as Trinidad possesses a flora of great variety, combin-

ing West Indian and South American plants, besides many indigenous to the island.

Experiments recently made by Prof. Schubeler, a Norwegian plant-geographer, confirm the belief that most plants produce much larger and heavier seeds in high northern latitudes than in those further south, the difference resulting from the prolonged influence of light consequent upon the length of the summer day at the far north. One of the most remarkable instances he noted was that of Dwarf Beans, which gained sixty per cent. in weight when taken from Christiania to Drontheim, a distance of no more than four degrees; and another was that of Thyme, which, taken from Lyons to Drontheim, gained seventy-one per cent. All our cereals likewise show a marked increase in weight when grown at the far north.

The new museum building of the Royal Botanical Garden in Breslau, Germany, was recently opened. With its fittings it cost about \$50,000, and it contains, in addition to the large rooms in which the collections are arranged, a library, a lecture-room with seats for 100 persons, an apartment for the Institute of Plant Physiology, another of a large size for microscopical work, and a number of smaller ones devoted to different purposes. The collections include an herbarium; a collection of woods, seeds, fruits, specimens prepared in alcohol, and pictures of the most useful exotic plants, so arranged and catalogued that the general public may be interested and instructed; a colonial botanical collection; a phyto-palæontological collection; and a collection of cryptogams. The Director, Professor Engler, invites correspondence with a view to the exchange of duplicates.

Bulletin No. 2, just issued by the Forestry Division of the Department of Agriculture, contains several interesting papers grouped together under the general title of the Forest Conditions of the Rocky Mountains. Some idea of the depredations upon the National Forests, and the powerlessness of government officials to prevent them, can be formed from the extracts here given from Reports of the Commissioners of the Land Office. Professor James writes of the relations of the Government to the Forests, showing that there is abundant precedent, if any were needed, to justify state and national legislation for protecting our forests. The Report of Colonel Ensign gives an account of the forests in the various states and territories in the Rocky Mountain region. George B. Sudworth writes of the forest flora of the region, giving an artificial key to facilitate the identification of the principal species, a work which would have been more useful if all the known species had been included. The needs of the Yellowstone Park are considered by Dr. Arnold Hague, and Mr. Abbot Kinney writes of the forests of some of the Southern counties of California. A summary of legislation for the preservation of timber or forests on the public domain is given by Mr. N. H. Egleston. The effect of the climate of Colorado upon trees is discussed by Mr. George H. Parsons, and Mr. Fernow writes of the formation and preservation of snow slides and avalanches.

Writing from Rome, in the *Christian Register*, Miss Augusta Larned says: "One of the most beautiful of the old cloister gardens is attached to the sumptuous church of St. Paul's Outside the Walls. . . . The whole garden is filled with Roses and sweet herbs. In the middle stand the old well and the sun-dial, but everywhere the pink buds and blossoms are turned towards the sun. The midday warmth brought the odors of Lavender, Rosemary and Mint—scents all the brotherhoods seem to love by instinct. Such depths upon depths of peace and quietude filled this monkish Rose-garden I felt I could sit there for hours and muse on a skull without getting too strong an odor of our mortality. For the glorious Italian spring triumphed over death and decay. . . . The prettiest monastic garden I have seen in Rome adjoins the church of San Pietro in Vincoli, where the 'Moses' of Michael Angelo and the 'Saint Margaret' of Guercino are to be seen. . . . The monastery is now turned into a school for engineers; but the polite attendant is always ready to open the glass door and let you into a grassy nook planted with tall old Orange trees, covered with the golden fruit, into which the Banksia Rose has clambered with a perfect tempest of blossoms, while spring flowers and blooming shrubs fill it to overflowing, run riot over the paths, and paint themselves in vast nosegays against the dark green and golden background. A pair of rooks were fluttering in the shrubbery, the first I had seen, and bright green lizards slipped away between the stones of the old wall. The silence and freshness were indescribable; and, as usual, the vanished brotherhood had left a savor of sweet, old-fashioned herbs behind them."

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Sentimental Objections to Felling Trees.—II.

WE spoke recently of that unwise and sentimental affection for trees, which so often interferes with their removal when removal would mean a conspicuous increase in the beauty of their surroundings; and we argued that its false basis is shown by the fact, that it is as often exhibited in the case of decayed and unsightly trees, as in the case of those which, in themselves, have a clear title to admiration.

But the most unfortunate effect of this unwise affection remains to be mentioned. The spirit which condemns the axe when the interests of general beauty require it to be raised, refuses it likewise when the interests of the trees themselves make the demand. Every walk we take through public park or private grounds, shows us not only many cases where beauty of general effect is injured by superfluous trees, but as many where the trees themselves are injured by overcrowding. Trees which have started spontaneously, or have been carefully planted by a landscape-gardener, in such a way that while young they agreeably clothed the spot and usefully nursed one another, have been allowed to grow into spindling groves or tangled thickets, which are not beautiful as a whole and contain not a single satisfactory specimen of tree-development.

Here, for example, is a solid clump which has no beauty of outline and no variety of light and shadow, and in which the colors of the different species are mixed in a confusion that is not true contrast. Thinned out in time, we might have had instead a smaller number of fine specimens, each graceful in form, each contrasting agreeably in color with its neighbors, and all together making a group or a little wood which would have pleased not only by its beautiful outlines, but by its evidence of healthy growth and luxuriant development. Here, again, is a line of trees which were intended to form a screen to shut out some unsightly object or to conceal the limits of the place. When first planted it did form such a screen, although of inconsiderable height, and with judicious thinning it might have remained a screen while its height increased. But

left unthinned it has grown into a spindling row of bare stems, which carry poorly developed heads of foliage far in the upper air, while between them the undesirable object can be clearly seen. In still another place we find two or three trees growing so close together that their branches meet and the growth of each has been checked on the side towards the other. Of course when they are of the same, or of related, species, and stand very near indeed together, the effect may be agreeable, as being the effect of a single large head, supported by two or three stems. But even when they are of the same species the effect is often bad if the stems are so far apart that we clearly realize we have two or three poorly developed specimens where we might have had a single one in beautiful development. And it is a distressing effect indeed when the trees are of different species, and inharmonious one with the other. Quite as often as not this is the case when man's hand has done the planting. It is no uncommon thing, for example, to find instances where a tapering evergreen and a round-headed deciduous tree have been allowed to grow so close together that their alien forms and colors and textures are absolutely welded together in a union as unnatural to the mind as displeasing to the eye.

It is no new grief to which we thus give voice. Doubtless there has never been a time when, by unthinking persons, it was not regarded as, under any circumstances, a crime to cut down a tree. Certainly the literature of gardening art echoes the complaint of the landscape-artist of to-day, that no difficulty with which he has to cope is as great as the difficulty of making an owner thin out his plantations at the proper time and in the proper way. Brown, the famous English landscape-gardener of the last century, has for generations been bitterly abused for forming close, round, hard clumps of trees and spotting them about on lawn and meadow. But there is no doubt that he intended these clumps to be thinned, so that they might eventually resolve themselves into lighter, more varied and more graceful groups. Therefore, when we read of "Brown's clumps" as synonyms for what should be avoided by the planter of to-day, it is not Brown himself but his clients who are really put in the pillory.

It should be remembered that no landscape-gardener can protect himself against a similar fate by planting only those trees which he would like to see in the full-grown group or wood of later years. In the first place, few owners would be content to see the spot for a long period merely dotted over with small, isolated trees; in the second place, young trees must often be planted closely for mutual protection against wind and cold; and in the third place, as no one can predict with accuracy how any given tree will grow, a margin must be left against possible contingencies, not only of life and death, but of peculiarity in development. A planter can hardly imagine in detail the group he wants, and then plant for that group and for nothing else. The best he can do is to decide upon the general size and character of his group; plant in such a way that the probability of getting something near to it in effect will be insured; and then watch his plantation, and thin it out in accordance, on the one hand, with his own wishes, and, on the other hand, with the peculiarities of his developing trees.

Of course such a process as this needs care and thought and taste. But it is just this fact that we desire to impress upon our readers—only by the exercise of care and thought and taste, not only in the act of planting but continually afterwards, can really beautiful results be achieved in any branch of gardening art. After a plantation is made, then the real work of creating it has merely begun; this work must be prolonged for many years, to preserve the beauty of the trees as individuals, no less than to preserve the beauty of the general effect of the scene; and it must very often consist in larger part of the judicious cutting out of individuals which are not only superfluous but detrimental. Yet the hardest task of an artist is to persuade an owner to cut down trees which were never intended long to remain;

and generally it is harder still for an owner to persuade himself to sacrifice a tree of his own planting, even though, by his own confession, it would be far better out of the way.

In the upper part of the lower Michigan peninsula and in the upper peninsula are numerous sandy, barren plains, sometimes called Jack Pine Plains from the prevalence of the Jack Pine (*Pinus Banksiana*) upon them. The largest of these barrens occupies several hundred square miles, and there are others nearly as large. It is believed that these barrens are due to the continual burning of the forest, originally, perhaps, first prostrated by tornadoes. The surface is almost entirely destitute of vegetable-mould; and often it is nothing but a mass of shifting sand, upon which plants are unable to obtain a foothold. The cheapness of these lands has had the unfortunate effect of inducing many emigrants to settle upon them. Hundreds of abandoned homes testify to their worthlessness for agriculture, and stand as witnesses of misdirected labor and disappointed hopes. It is now, however, proposed by the State of Michigan to demonstrate by scientific experiment the value or the worthlessness of these Jack Pine lands. The State Board of Agriculture has established an experimental farm upon land given for the purpose by the Michigan Central Railroad corporation near Grayling, in Crawford County, in the heart of the Jack Pine region. The problem to be solved, as stated by Professor R. C. Kedzie in Bulletin No. 37, from the Experiment Station connected with the Agricultural College of Michigan, which is devoted to this subject, is this: "With a light, sandy soil of very porous quality, in a northern climate subject to late frosts in spring and early frosts in autumn, and liable to midsummer drought, with no fertilizers except marl, salt and plaster, can any methods of tillage or kinds of crops bring these plains into profitable cultivation for ordinary farming, stock-raising, or fruit production?" A thousand years of tree growth, if fires are kept away, may restore some of the lost fertility to these lands, but that any method more rapid in its workings can avail to make them profitably productive, hardly seems probable—a view which more than one settler who has seen his hard-earned savings melt away in an effort to make this land bear fruit, will, we imagine, gladly indorse. It is right, however, to demonstrate by actual experiments, carried on by trained investigators, whether such lands are really worthless, lest the tide of emigration, beguiled by offers of cheap homes, may still continue to press in upon these barren sands.

The following remarkable statement, which has been going the rounds of several of the special journals devoted to the lumber industry of the country, will give some idea of the popular ignorance in regard to trees in this country. The tree referred to is the *Virgilia*, or Yellow-wood, of which a description and illustration were published in this journal on the 18th of April. The *Virgilia* is a rare tree in a wild state, although it is not confined to the neighborhood of Nashville, being found more or less abundantly from Kentucky to Cherokee County in North Carolina, and it is now one of the most generally planted and best known ornamental trees in the Northern States:

Within a radius of sixty miles of Nashville, Tenn., there is found a tree that is supposed to be the shittim wood of Bible fame. Celebrated botanists from all over the country have examined the trees and agree that they grow nowhere else on the globe. They have decided that it is the shittim wood of which the tabernacle was constructed, mention of which is made several times in the Bible. The tree is medium-sized, with very dark, smooth bark, and the wood is of a bright gold color. In early spring the trees are laden with long white blossoms, closely resembling great ostrich plumes. There seems to be no doubt about the identity of the trees, and it is remarkable that they are found only in this small area, and so few at that.

A California Garden.

TRAVELERS who visit the Hotel del Monte, at Monterey, are always interested in the strange garden filled with curious forms of vegetable life, generally spoken of as the "Arizona Garden," which the proprietors of this establishment have caused to be collected there from the extreme southern parts of the State and from Arizona.

Our illustration of a part of this garden upon page 403, gives an idea how succulent plants can be grouped together harmoniously, and of the value of such plants in a dry climate like that of California, where green turf cannot be maintained during the summer months without constant watering. The two tall cylindrical plants on the right and left of the picture are young specimens of the tallest of all the Cactus family, *Cereus giganteus*; between these, in the background, is a plant of the noble desert Palm of southern California, *Washingtonia filifera*; and still further in the background may be seen part of the group of Monterey Pines (*Pinus insignis*) which surround the hotel—one of the very few natural growths of this tree—which is one of the least widely distributed of American Pines, although it is now, however, very generally cultivated in the Pacific States and in central and southern Europe.

The Serpent Mound Park.

THE traveler who happens to be passing along the excellent turnpike from Hillsboro to Locust Grove, in Adams County, Ohio, is likely to be surprised when his attention is called to a prominently displayed sign-board, near the eastern end of Brush Creek bridge, with the legend: "Entrance to Serpent Mound Park." One is not prepared for any such announcement. The surrounding country gives no suggestion of a park, to one who drives for miles through a succession of thrifty farms, and an occasional, sleepy, cross-roads village. If we accept the implied invitation of the sign-board, and enter the grounds, other notices, conspicuously posted for our guidance, will be observed, and naturally we follow the pointing of one which directs to "The Serpent." A winding road leads to the summit of a broad plateau that, at present, is anything but park-like, for reasons to be mentioned later, but still every vestige of the former farm surroundings is wanting. The old worm fences, with their wealth of weeds, have been removed, and in their stead many small trees of different species have been recently planted. But the claim of the spot to be considered a park does not rest upon this small showing; finished pleasure grounds are not lacking, and a grove of oaks and maples, with both a sweet-water and a sulphur spring, is now available for picnic purposes, and, I may add, is well patronized.

Passing by both these finished and unfinished portions of the park, we proceed to "The Serpent," now lying directly before us. Upon a jutting tongue of level land, that reaches into, and one hundred feet above, the beautiful Brush Creek valley, rests that mysterious earth-work of an unknown people—a serpent, fourteen hundred feet in length, with closely coiled tail, gracefully curved body, and widely gaping jaws. Beautiful as it is in itself, our interest steadily increases as we look upon it, from the fact that it antedates all history. Since its discovery and description by Squier and Davis, in 1847, the spot has been often written of, and more theories have been broached concerning its age and origin than there are curves in its tortuous length. This has not been to the advancement of American archæology directly, but it has led to the purchase and preservation of the mound by the Peabody Museum of American Archæology and Ethnology, of Cambridge; and now it is not only available for all future students of ancient America, but its surroundings, some seventy acres, have been set apart as a public park, and so are of interest to the readers of GARDEN AND FOREST.

I have spoken of the unpark-like condition of the high plateau, through which the main drive passes. The present disturbed condition arises from the fact that every inch of the ground is being carefully explored for traces of the serpent builders, and the results so far go towards the establishment of the view that the people who erected the earth-work were not historic Indians—Cherokee or Shawnee, as has been asserted—but a race akin to, if not identical with, the ancient Mexicans. But I will not further trespass upon the work nor anticipate the conclusions of Professor Putnam, who is

conducting these explorations in a thorough and able manner.

The setting apart of a considerable tract in the midst of a rich farming district, as a public park, in connection with the preservation of this invaluable relic of the past, was a most happy thought; and additional educational interest centres in it from the fact that Professor Putnam has established here an arboretum on a limited scale, by having planted specimens of the many trees native to the region, thus returning it to the conditions obtaining previous to the advent of the white man.

As years roll by, this beautiful spot will undoubtedly become more and more attractive, and the wisdom of the establishment of the Serpent Mound Park will be universally acknowledged. Let us hope, therefore, that the efforts now being made to preserve other equally interesting traces of a forgotten people, in Ohio, may be likewise successful, and not one but several such parks be the boast of the people of this thrifty State.

Serpent Mound Park, Ohio. _____ Charles C. Abbott.

English Flower Gardens.

IT is pleasing to see the increasing love and extended cultivation of hardy flowers, but the improvement of English flower gardens by their use proceeds very slowly. In many places the flower garden is still sacrificed to bedding out and presents the same meagre assortment of plants, the natural consequence being that in summer English flower gardens have great similarity of aspect, with few features of real interest. Each season brings the same monotonous form, with perhaps a little variation of style.

Pattern gardening was and is the greatest enemy to both gardeners and gardens; to gardeners, because, owing to the lack of material that would readily lend itself to this, many present-day gardeners are under the idea that beautiful flower beds cannot be made with hardy flowers; to gardens, because, in all situations and on different soils, each of which is capable of supporting some distinct types of vegetation peculiar to itself, the same subjects have been used. Hence the ultimate outcome, formality and sameness. We do not meet with so many of the complicated carpet enormities as in former days, but there is still room for vast improvement. It is too much to expect owners of gardens to undertake the work, although there are a few exceptional cases where this has already been done. Nevertheless, there are plenty of people who think and admire, and, without a doubt, would appreciate a change which tended towards the improved embellishment of flower gardens by the use of an increased variety of hardy plants. Before this can be done a much wider knowledge of plant life will be needed. We want originality and the capacity to evolve new ideas. It is the lack of knowledge of the inexhaustible resources of Nature that is the root of the evil; and how can it be otherwise while young gardeners are trained under glass alone, and are scarcely brought into contact with hardy flowers, trees or shrubs?

A judicious and proper selection is of great importance. A few beautiful bedded-out gardens have been made, against which little reproach could be urged, but they have been carefully planted, and they have been beautified with a greater variety of summer garden plants. The mass of flower and gorgeous color has been toned down by graceful foliage and refreshing greenery. To one beautiful garden of this kind there are hundreds sacrificed to about half a dozen subjects, that were grown twenty years ago and are still grown now. During the present summer I was shown over a place which had the reputation of being fairly good, and after having walked around the flower garden and been asked to admire the usual scarlet, yellow and blue monotony, I found only one feature of real interest, and that in the kitchen garden mixed border. It was a large group, covering several square yards, of a very fine form of the white *Campanula Persicifolia*. The distant effect was very charming. The flower garden is the true home for all such flowers as this, and many more might be easily selected.

The beautiful garden of the future will be adorned with hardy flowers planted in open natural groups instead of the old dot-a-plant-everywhere system, that rendered the mixed border so unsatisfactory, and did not give a true idea of the capabilities of many of the subjects planted therein. An ideal English garden should have beautiful flowers for at least nine months out of twelve. We want lasting interest, a garden with vegetation that changes with the seasons, but is not defined by them. Week by week, month by month, some fresh charm should appear, some new picture unfold to view. The garden of hardy flowers is equal to this.—*The Garden*, London.

Foreign Correspondence.

London Letter.

THE Oleander (*Nerium Oleander*) is now among the glories of southern gardens, especially in Italy. The other day I strolled through one of the famous gardens on the banks of Lake Como, and in that paradise of flower and fruit nothing delighted me more than the large Oleanders, covered with blossoms as large and as double as Camellias. I had never before seen this plant in perfection, for it cuts a poor figure in English gardens. We cannot give it the roasting sun-heat and cloudless skies that seem so necessary to its perfect growth, but I believe that in the United States it would flourish as it does in Italy, since you could give it the summer-heat it wants, and its protection in winter, when grown in portable tubs, is not a great undertaking. Of some dozen distinct sorts seen in Italy the difference consists mainly in the color of the flowers. Besides the deep rose-pink, which is common everywhere, I saw a variety with pure white single flowers, one with flowers double white, a double deep red called Splendens, a double rose, a large single, copper-colored (*Cupreatum*), a pale yellow, double and single, and a very rich rose-purple named Professor Duchartre. Other unnamed varieties were quite as fine. On inquiry I found that the bushes received little or no attention. They were for the most part in large square tubs, and all looked as if they had been undisturbed for years. Each season a slight top-dressing of manure and soil was given, more to fill up the tubs than to benefit the plants, and all the attention given was frequent watering, the Oleander being a very thirsty plant. In some places the tubs are put under shelter in cold weather.

The Shrubby Mallow, as *Hibiscus Syriacus* is commonly called in English gardens, is one of the few hardy shrubs at present in bloom, and very attractive it is when in flourishing condition. To do well it must have a deep, moist soil, the richer the better, and if, in addition to this, it is sheltered and partially shaded, then it is a beautiful shrub in autumn. There are now a multitude of varieties in our gardens, most of them with very uncouth names, and many of French origin. There is, however, a great sameness in the majority of the sorts, the prevailing color being a kind of purplish rose, with crimson centre. In a large collection of sorts at Kew I singled out the following as the most distinct: Puniceus plenus, Rubro plenus, Albo-plenus, Cœruleus plenus, Ardens and Duc de Brabant. In Mr. Anthony Waterer's nursery at Knap Hill there is a fine display of bloom, two of the finest sorts being Totus albus, a pure white variety, very beautiful, and Cœleste, which is the nearest approach to a true blue Hibiscus that has been obtained. The flowers are large, single and of a rich purple-blue, quite a different tint from that of any other sort. The great value of the Syrian Hibiscus lies in its autumn flower, and that is why it is always planted in English gardens, whether the conditions are suitable for it or not.

Lemoine's Hybrid Montbrietas are now found to be indispensable autumn flowers, being so graceful in growth, so profuse in flower, and so bright and rich in color. The first hybrid which came to us a few years ago, under the name of *M. crocosmieflora*, was the result of intercrossing *M. Pottsii* (a Cape species, with wheat-ear-like spikes of small red and orange flowers), with the well-known old *Tritonia* (*Crocosma*) *aurea*, with large bright orange-red flowers. The hybrid combined the character of the parents in a remarkable way. Its flowers became larger than those of *M. Pottsii*, but quite as numerous, while the color was intermediate and more pleasing than that of either parent. It was, moreover, soon found to be much hardier than *T. aurea* and could be left out in the open border in winter like *M. Pottsii*. This original hybrid, *M. crocosmieflora*, has now become a popular garden plant with us; in fact, is quite common, and especially as a pot plant in green-houses. Its sheaf of waving flower stems in August

and September makes it very beautiful, and as it continues in bloom for weeks, its value is enhanced. M. Lemoine, the famous hybridist of Nancy, has raised other hybrid Montbrietias, one of which I saw the other day in Mr. Wilson's garden at Weybridge, under name of Gerbe d'Or. It is like the older *M. crocosmiaeflora*, except that the flowers are of a pure rich yellow, instead of orange-red, blotched with crimson. It is very beautiful, and though it has not come into general cultivation, it is certain to become popular, especially as a green-house plant.

Ivora Duffii.—Those who want a really fine stove plant for autumn flowering should become possessed of this evergreen shrub, introduced a few years ago from the South Sea Islands. In my opinion, it is the finest of all the *Ixoras*, for though it does not produce such a number of small flower clusters, its huge heads of bloom have an impressiveness which places it in advance of all others. A well grown plant is about four feet high, with large, deep green leaves, and it produces, at the extremity of each main shoot, an enormous cluster, often nine inches across, of deep scarlet-crimson flowers. It generally begins to flower early in August and lasts in bloom for several weeks. It is of simple culture under ordinary warm-stove treatment. It is grown to perfection at Kew in the Water Lily house, which is always moist and warm, and it has been the admiration of visitors for weeks past. It is a stock plant in nurseries and is known also by the name *T. macrothyrsa*.

London, September 20th.

W. Goldring.

New or Little Known Plants.

Rhododendron (Azalea) arborescens.

THIS beautiful Azalea was first made known to botanists by Pursh, in his "Flora of North America," published in 1816. He had found it in the mountains of Pennsylvania, and in Bartram's garden at Philadelphia, where John Bartram, who was, therefore, its real discoverer, had planted it many years before. Neither the elder Michaux, who traversed over and over that part of the country where this species is most common, nor Fraser, who had explored the Alleghany Mountains some years before Pursh visited that region, seems to have noticed it, although it is hardly possible that they would have overlooked so common a plant, which they, perhaps, confounded with *R. viscosum*.

It is stated in Nicholson's "Dictionary of Gardening" that *Rhododendron arborescens* was introduced into English gardens in 1818, but it has probably never been very well known in Europe, and was soon lost, perhaps, from gardens. Our figure upon page 401 is, at any rate, the first which has been published of this plant, which, through the agency of the Arnold Arboretum, has been distributed within the last five or six years among many of the principal American and foreign collections.

Rhododendron arborescens is a tall shrub, with slender branches, sometimes fifteen or twenty feet high, and obovate or oblong-obovate, slightly coriaceous leaves, ciliate on the margins, bright green and shining on the upper and pale on the lower surface. The flowers are white or tinged with rose, the long, slender tube of the corolla, and the conspicuous, narrow calyx-lobes somewhat glandular bristly. The brilliant scarlet stamens and pistil add to the beauty of the deliciously fragrant flowers, which are not viscid like those of its nearest American relative, the familiar Swamp Honeysuckle (*R. viscosum*). They are later than those of other Azaleas, not appearing until July, and are often obscured by the shoots of the year which precede them, a habit which lessens somewhat the value of this species as a showy garden plant. The leaves, in drying, exhale the perfume of newly mown grass—a character which has not been noticed in other Azaleas.

Rhododendron arborescens is a native of the mountain region from Pennsylvania to South Carolina and Tennessee, where it is frequently found in great abundance, especially among the foot-hills of the high mountains

of North Carolina, bordering and often overhanging the smaller streams and filling the woods in early summer with fragrance.

It is perfectly hardy in the Arboretum, where it receives no special treatment, and flowers freely every year.

C. S. S.

Cultural Department.

Winter Apples.

THE Baldwin is the most satisfactory winter Apple, as well as the most popular variety in this vicinity, and yet in the southern part of this state it is regarded as a fall Apple, and esteemed only as such. I confess its record for keeping qualities is not as good here as it was once, but its size, beauty, flavor, and fine bearing qualities render it a general favorite notwithstanding.

The universally popular Rhode Island Greening is still a great favorite, but it does not grow as smooth generally as the Baldwin. Neither does the tree grow as well. Its reputation as a keeper is also on the wane; and this will apply to all of our Apples once famous for long keeping. It was not unusual years ago for farmers to have a generous supply of Apples in April and May, a thing now very rare indeed. The cause or causes contributing to this changed condition give rise to much speculation, but no conclusion that is generally accepted has yet been reached. Possibly new varieties may be developed in the future that will occupy the positions in this respect once held by our old-time favorites.

Smith's Cider is a very popular winter Apple in Pennsylvania and southern New Jersey. The Apple is of fair size; the trees bear young, and when grown are immensely productive. The fruit is of fine quality and keeps well. It promises to do well in this section of the state.

One of the best winter Apples I am acquainted with is Peck's Pleasant. High-flavored, productive, and a good keeper, it very well fills the place once occupied by the famous Newtown Pippin, a variety long since superseded by others better adapted to our locality.

Northern Spy is also a fine, high-flavored winter Apple, but the tree is rather tardy in bearing, and the fruit is very liable to grow imperfect, and rots to such an extent as to impair its value.

Fallwater is a large Apple, a young and abundant bearer; very popular in some portions of Pennsylvania, but of late I hear complaints that the trees fail early. The fruit is not of first-rate quality.

Ben Davis, a popular Apple in the West, gives good promise here of early productiveness. The fruit is fair, handsome, of good size, and keeps well, but the quality of the fruit is far below that of the varieties already named.

Winesap, a beautiful red Apple, of excellent quality, of medium size, has proved one of the best keepers.

Yellow Bellflower is also a fine-looking and good-keeping winter sort. It seems among winter Apples what the Orange is among autumn ones, the chief objection to it being its large core.

Wagener stands near the head of all the winter Apples I am acquainted with for quality; of medium size, with a tender, crisp, fine-grained flesh.

In southern New Jersey the Roman Stem is a great favorite, an Apple the farmers always keep for their own use. At the Mount Holly Fair two years ago there were about fifty plates of this Apple on exhibition, entered for the prize offered for the best plate, which shows how extensively it is grown there. I am not aware of its trial in this section.

For a sweet winter Apple which is wanted for baking, Talman Sweet is probably as good as any; but the winter sweet Apple of this region is the old-time Canfield, the standard winter Apple of our fathers and grandfathers, a very prolific sort, and one that will stand more rough handling than any other. A bruise on the Canfield will dry up; on any other it will rot. This Apple still holds its place in the affections of the farmer, though it is a poor Apple for dessert or cooking. Its great merit is for cider. Its old-time consort, the Harrison, once so popular, and the richest of all Apples, has failed so completely of late years that a tree of it is a great rarity. Its present status affords a fit answer to the question, Do varieties run out or degenerate? These two Apples were the foundation in years gone by of New Jersey's well-earned reputation for "Newark cider," vast quantities of these Apples being crushed together and distributed widely through the Newark market. There was a cider-mill on every third or fourth farm, but nearly all of them long ago fell into decay.

I have only given the names of leading Apples of established



Fig. 64.—*Rhododendron* (*Azalea*) *arborescens*.—See page 400

character and reputation. But besides these, and other less prominent ones, it is well to remember that every section has local varieties of real merit, especially adapted to their soils, and quite as profitable, if not of such fine quality, as any of the newer sorts. Many a good Apple has not been honored with

book registry nor described by an official pomologist. These old and valuable varieties should not be neglected and allowed to disappear. Every man who owns an orchard or an Apple tree should know how to graft and bud, and see that these choice old-time varieties are not forever lost. The old Pom-

pey, or Victuals-and-Drink Apple, was a great favorite here years ago, and would be as welcome to-day as ever, but I do not know of a tree in existence in this neighborhood, and it is doubtful if it could be had in any nursery. Other varieties are disappearing in the same way, and the loss seems all the more annoying when it is easy with a few buds or grafts from one of these old trees to put a new head on a young tree and preserve the old friends.

E. Williams.

Montclair, N. J.

The Flower Garden.

NOTWITHSTANDING the sharp frosts last week our garden still shows many bright flowers. The Meteor variety of the Pot Marigold, from summer sowings, is in capital bloom, and likely to last for a month to come. Sweet Alyssum is as white and fragrant as ever; so, too, would be the Mignonette were it not for the very wet September just passed. The double white Feverfew is in good bloom a second time, and Tritomas will remain in full glow till Thanksgiving. Half the crop of buds of the handsome Japanese Anemones have not yet opened. What a pity this plant is not earlier and hardier. *Sedum Sieboldii* is perfectly hardy here, and its best bloom is in October. Sweet Violets are beginning to bloom, and the Eschscholtzia will display its golden flowers till snow comes. Maximilian's Sunflower is the finest species of its race at this time of year.

Hardy herbaceous perennials may now be transplanted. Tuberos-rooted species, like the Pæonias, Liatris and Monkshood, may be planted now as well as in the spring, and early spring flowers, like Moss Pink, Aubrietia, *Saponaria acymoides* and bulbous plants do better planted in fall than in spring. Columbines, in particular, do better when planted in the fall. But summer and fall blooming plants, like Veronicas, Phloxes, Helianthus, Japanese Irises, White Day Lily and the like, should be planted in spring, especially if these plants are to be divided, with the view of increasing the stock or reducing the size of the parent clump. Somewhat tender plants, like Japanese Anemones, Conoclinium, Acanthus and *Oenothera speciosa*, should never be disturbed in fall except to be removed to a cold-frame or other favorable quarters. If they have any chance at all of surviving the winter, it is as established roots, and not as newly-planted stock.

Long Island.

G. C.

Japanese Iris (*Iris lævigata*) from Seed.

ALTHOUGH this Iris may now be imported direct from Japan in a multitude of beautiful varieties, the raising of new ones from seed may be made profitable as well as interesting. When left to their natural development they produce but little seed, and the varieties obtained from this are ordinarily no better and usually not as good as the originals, but when carefully hand-fertilized nearly every flower so treated will produce its pod of seed, and a large percentage of the flowers will be better and most of them quite as good as the parents. By actual count it has been found that of seedlings from hand-fertilized flowers, forty per cent. were varieties worth preserving, while of plants from seed produced naturally but six per cent. were good. It is desirable to have some varieties to flower earlier in the season, and this may be accomplished by a careful selection of seed from those that first come into bloom. Already we have plants which begin to flower in the latter part of June, and we still had fresh flowers on the 10th of August. Few garden flowers can boast of a much longer period of bloom than this.

That the raising of seedlings is not only interesting to the amateur, but may be made profitable to the nurseryman, is quite evident from the quantity of seed produced, which will average, from well fertilized flowers, about fifty in each pod, and when properly treated the young plants will be large enough to flower the second year, and a large stock may be secured in this way with much less labor than it can be by division. The process of hand-fertilization is quite simple after one has carefully studied the flower and located the essential organs. Upon examination, the Iris flower, in its normal form, will be found to be composed of nine distinct pieces or divisions, arranged in rows of three divisions each, one within the other. The two outer rows make up the six divisions of the perianth, the three outer are spreading or drooping and the three inner are smaller and stand erect. Inside of these again are three more divisions resembling somewhat the petals in form, but as close examination shows in reality the styles, with the stigmas near the apex in the form of a thin lip, the surface of which is covered with minute hairs. By pull-

ing back the petal-like tips of these styles the lip-like stigmas will be readily seen. Lying close beneath the styles, but connected at the base by the short and stout filaments with the tube of the perianth, will be found the anthers, which are long, lance-shaped organs, with the pollen contained in narrow cells along their margins. Nature, in providing for cross-fertilization, has so arranged the flower that the pollen is ready for use and gone fully a day before the stigmas are in proper condition to receive it; in fact, the pollen is ready for use before the petals begin to unfold, and it is a wise plan for the operator, after deciding what pollen he wishes to use, to take the flowers just as soon as they begin to open and cut out the anthers with a sharp pointed pair of scissors or small penknife, lay them away in folded papers or envelopes, marked

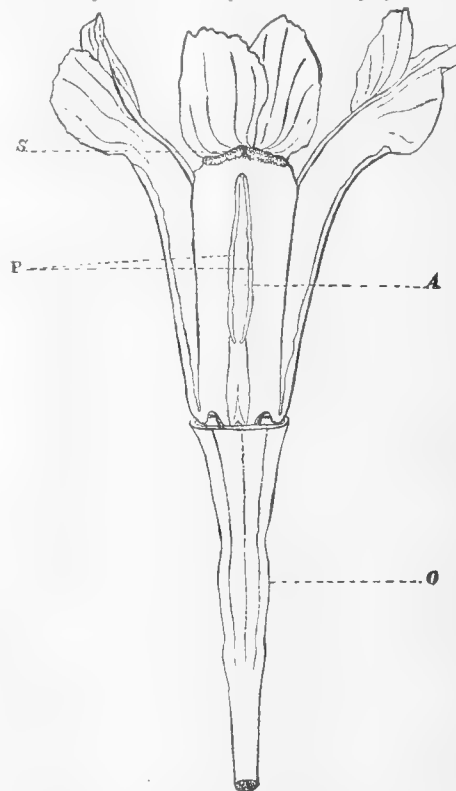


Fig. 65.—Flower of *Iris lævigata*, with the perianth removed. A, anther. P, pollen cells. O, ovary. S, stigma.

with the name of the variety from which they were taken, and keep them for future use; the pollen can be kept in perfect condition in this way for a week at least, and an abundance of pollen may thus be had when the stigmas are ready to receive it. This is an important precaution, for a very small native bee (a species of *Halictus*) is on hand as soon as the flower shows the smallest opening, and will have the anthers well cleaned of pollen by the time the flower is fully expanded. It would look as if the flower was made to be fertilized by the bumble-bee or some similar insect, but in this country, at least, the flowers are seldom visited by the larger bees, hence the scarcity of seed

when the plant is left to itself. When the flower first opens, the stigma will be found closely folded back against the style; but by the second day the upper edge will have been detached, and falling downward, the upper surface will be exposed and is now ready to receive the pollen. A small camel's-hair brush will be found the most convenient instrument with which to apply the pollen, which is done by simply taking off a quantity with the tip of the brush and lightly dusting the upper surface of the stigma.

The figure represents a flower with the perianth cut away, showing the three styles, one of the stigmas (S) and one of the anthers (A).

The good effects of this fertilization will be noticeable very early, for not only is it apparent in the flower when produced, but the pods are usually much finer and larger than when accidentally fertilized. The seeds germinate quite freely if planted, as soon as ripe, in good soil and carefully watered. For soil in which to plant the seeds I prefer well decayed leaf-mould in shallow boxes, from which the young plants are transplanted to the open ground the following spring.

Newton, Mass.

Arthur H. Fewkes.

Chrysanthemums.

WE grow these largely for cut flowers and for out-door decoration. They are raised from cuttings rooted in the green-house in spring and planted out in May, in well manured ground, in rows three feet apart by two and one-half feet apart in the row. In summer they are cultivated, watered now and then in very dry weather, and tied up with one stake to each plant. About the end of August or in September we select and pot the plants most desirable for furnishing good flowers and late ones in the green-house. Our largest supply

of flowers comes from out-door plants, but if wet, frosty or windy weather renders the out-door flowers unfit to pick, we have a supply in the green-house; also when severe frost destroys the out-door crop, as it usually does between the 20th and last of November, late green-house plants are then most welcome.

About the end of September or first of October we empty some beds—warm, sunny, sheltered beds against the south side of the house—of their tender summer occupants and fill them with Chrysanthemums, lifting and planting them with as good balls of earth to the roots as can be had and crowding the plants pretty closely against each other so as to form a solid bank. The Chrysanthemums not only live and blossom as well as if they had not been transplanted, but they lose very few leaves. As planting proceeds they are well watered, and they are afterwards kept well watered both at the root and overhead.

In another warm, sheltered place we set out, about the first of October, a large solid bank of Chrysanthemums containing several hundred plants for cut flowers. A light wooden framework is erected over this bank, and in the event of wet or frosty weather, calico cloth is spread over this frame. Here we can have fine flowers from the end of October till the first of December.

Raising Chrysanthemums from seed is very pleasant work. During the last five years we have raised hundreds in this way and nearly all have been beautiful. The majority have single flowers, still a large number have semi-double or double flowers, and of many shades of white, yellow and red. But of all these hundreds of seedlings only three have been worth perpetuating. The amount of rubbish annually distributed among new Chrysanthemums is simply appalling. Of sixty-two new kinds we bought last year we have thrown fifty away, as being not only poorer than old varieties of the same types and colors, but not worth growing. We greatly feel the need of some centrally situated, competent and responsible body of horticulturists to whom new Chrysanthemums and other flowers could be submitted for their opinion; such a body as the Floral Committee of the Royal Horticultural Society of London. A first-class certificate from such a body would mean something. In fact, even here in America, horticulturists regard a first-class certificate by the Royal Horticultural Society as the highest award a plant can have, and we buy such a plant with full confidence that we are getting something distinct from anything else in its way and also something well worth growing.

Chrysanthemum seeds germinate in seven to nine days and

the plants grow readily. Sown in the house in March, the plants will be big enough to set out in May, and they will attain a large size during summer. They will show flower buds in September, and all will bloom in October or November of the same year. We have now 150 plants in one bed which have been raised from seeds sown last spring. They are larger than the named varieties which have been raised from cuttings; all are now full of buds, and in form and foliage they are distinct from one another.

Glen Cove, N. Y.

William Falconer.



View in the "Arizona Garden," Monterey.—See page 398.

The Cultivation of Phalænopsis.

IT would be a great mistake to class all the Phalænopsis with the easy-growing Orchids, as there are several which I have never yet seen in a luxuriant condition. Nevertheless, some of the species are amongst the finest Orchids known. They all flower freely, and continue a long time in perfection. I never found any difficulty in cultivating *P. amabilis*, *P. amethystina*, *P. Esmeralda*, *P. grandiflora*, *P. intermedia*, *P. leucorrhoda*, *P. rosea*, *P. Sandriana*, *P. Schilleriana*, *P. Stuartiana* or *P. violacea*. Of *P. Schilleriana* I have many leaves made this season which measure from fourteen to eighteen inches long and from three and a half to four and a half inches wide, and I am justified in expecting some very strong spikes of flowers.

The species of Phalænopsis are best grown in baskets, as a more equal supply of moisture can thus be supplied to the roots. I always re-moss them in April or May, and re-basket any that require it. Every precaution is taken with the heart of the plant to have it leaning over the edge of the basket, so as to prevent any drip from entering, as decay is pretty sure to result. When the plants are re-mossed all decayed matter should be removed, and clean potsherds, with large pieces of charcoal, should be returned. A large piece of charcoal, so placed as to protrude through the moss, is beneficial. The roots will cling to it tightly, showing their relish for it.

Phalænopsis cannot endure a low, narrow house. They must be close to the glass; but all other conditions being provided for, the more spacious the apartment, the better they will thrive. I take my largest specimens and hang them in the south end, where they will get the benefit of the light and warmth from the sun. They get a syringing underneath the baskets every bright morning in order to thoroughly moisten the roots, and they need enough water to keep the sphagnum moist, but not saturated. Syringing the leaves is a great mistake, as it tends to make them soft, so that they lack that

leathery appearance which gives promise of the strongest bloom. As a rule, the plants are over-watered at the root, while too little moisture is given in the air. The flower-spikes should always be supported in some way, for if allowed to sway to and fro they will probably break many roots and loosen the plants.

I have found water charged with fertilizing ingredients, such as ammonia, salt, guano or phosphates, very beneficial when applied a few weeks after the baskets have been re-mossed. Every care should be taken in ventilating, as *Phalænopsis* will not endure chilly air. Fresh air should be admitted by the ground ventilators, especially in windy weather.

Shading should be carefully attended to, as the burning rays of the sun would soon destroy them when the leaves are young and unaccustomed to its heat. They should always be kept perfectly free from insects, and if thrips appear a slight fumigation with tobacco will be needed. The night temperature of the house, from the 1st of November until the 1st of May, should be 60°; during May and October it may be 65°, and during the summer it should be kept at about 70°. The day temperature should range from five to ten degrees higher, according to the force of the sun.

F. Atkins.

Staatsburg-on-the-Hudson, N. Y.

A Few Choice Ferns.

WITHIN the last few years a large number of beautiful Ferns have been introduced, many of them useful for cutting, and a few unexcelled for basket culture. The cultivation of Ferns is becoming more and more an important branch of horticulture, and a few commercial establishments have already confined themselves almost entirely to these plants. The old and justly popular kinds will always take the lead for general trade purposes; for finer work, and especially for conservatory decoration, the newer kinds will always be sought for. One of the latest introductions, and the best in its class, is *Nephrodium rufescens tripinnatifida*, a large fern with fronds about four feet long, arching, wavy in outline, the pinnæ being very irregularly divided, light green, and covered on both sides with a reddish chaff. The stipes are reddish-brown and covered with a woolly coat of the same color, and the general appearance of the fronds gives one the impression of ostrich plumes. This plant is suitable for baskets, and makes a magnificent pot-fern; and for cutting purposes, where large fronds are needed, it is excellent. It thrives in a warm green-house, growing rapidly in rich, well drained soil, and requires an abundance of water. It is troubled at times with a soft scale, which may be prevented by constant syringing. It increases freely by the adventitious buds on its numerous stolons, which may be taken off as soon as they are able to take care of themselves.

Davallia tenuifolia Veitchii is an elegant fern and admirably adapted for basket culture. The fronds spring thickly from a creeping, wiry rhizome, and are about eighteen inches high, arching, with the pinnæ very finely divided, giving to the plant an airiness quite unrivaled. In color the fronds are pale green, while the stipes have a reddish tinge. It grows freely in an intermediate temperature, in a light compost composed mostly of peat. It should never be allowed to become dry; it is easily propagated by division of rhizome or by spores.

Grynogramma schizophylla belongs to the silver Ferns, and is vasiform in habit, with very finely divided, drooping fronds. It is one of the most graceful of the whole genus. It is recommended for basket-work, but does best with us in pots. This may be owing to the damp shelf on which the pots stand. The fronds are proliferous, and the young plants may be taken off, pegged in pots of sand and watered lightly until root action is well advanced. If these young plants are not needed, the beauty of the plant is much enhanced by leaving them on. The variety *Gloriosa* is much more vigorous than the last named, the fronds are longer, broader, but not so finely divided. Both kinds delight in abundance of heat and water, but if the foliage is wet too much the farinose powder will soon be washed off. A large proportion of loam in the soil will be found beneficial.

Among the new Maiden-hair Ferns, *Adiantum Williamsi* is probably the best. It is a strong-growing kind, with fronds about two feet long, which while young are covered with a yellow dust. It grows freely in an intermediate temperature, and will very quickly grow into large specimens. The mature fronds are good for cutting. A strong soil will be found best, especially when permanent specimens are required, and liberal applications of manure water are beneficial.

Adiantum Victoriae is a valuable addition to the dwarf-growing section. The fronds are about nine inches in height,

with few pinnæ, and the pinnules are large, with finely serrated edges. The general appearance of the plant is that of a dwarf *A. Farleyense*. It should be noted that to keep this Fern in good health it should be often broken up. The fronds grow so thickly together that large specimens are apt to rot at the centre.

Adiantum Pecottii is a charming little plant, about six inches high, much in the way of *A. bellum*, and, like this fine species, will be found very useful for general decorative work.

Among the many varieties of *Adiantum cuneatum* that named *Grandiceps* is one of the best. In this Fern the fronds are terminated by a tassel-like appendage caused by the fasciation of the terminal pinnæ. It is a splendid kind for baskets, and young plants in pots will be found superior to the species. It may be raised and will come true from spores.

Adiantum Weigandii, of American origin, is a handsome, robust species, which can be grown both in a warm and a cool temperature, and will prove an excellent kind where heavy foliage is needed.

Nephrodium Rodigasianum.—This is a very elegant Fern of vasiform habit, with broad, arching fronds, two to three feet long, of dark green color. The pinnæ are long, deeply and irregularly cut, with somewhat wavy edges. It has decided preference for a cool house, and requires liberal treatment in respect to soil and water. It grows rapidly, and is easily raised from spores. Unfortunately, the fronds are too brittle to be of any use for cutting.

F. Goldring.

Kenwood, N. Y.

Removing Raspberry Canes.—It is still debated whether this should be done soon after the fruit is gathered or left till later in the season. I have for years cut them as soon as convenient, after the berries are picked. My reasons for an early cutting of the old canes are that, having served their purpose, they are of no further use, and if allowed to ripen and mature till a natural death follows, they are a useless drain upon the soil and the vitality of the plant. If removed, the young canes receive all the nourishment furnished by the roots, and should be better developed and matured as a consequence. It is also easier to cut off the canes while still green than when dry and dead. Hand-shears are preferable to a knife, avoiding the pull, which sometimes lifts the whole plant, when the canes are hard and dry.

The opponents of early removal claim that these old canes are an aid to the maturity and development of the young canes; that it is Nature's way, and therefore right. It is also claimed that if left till spring they afford needed protection during the winter to the young canes. There is a show of reason in the protection theory, but as the injury is very apt to occur in early spring, after the old canes are removed, the benefit becomes less apparent, and is more than counterbalanced by the draught on the plant in the process of ripening. The above remarks will apply also to Blackberries, the worst of all the berry canes to handle.

Geraniums, Crane's-Bills.—These include some useful border and rock-garden plants. All the kinds in cultivation, with one or two exceptions, are hardy in this country. The alpine species will require good drainage, but the others will grow almost anywhere. Geraniums have a long flowering season, and bloom more or less from early May until frost. This is the case, particularly, with *G. sanguineum*. Plants are easily raised from seeds or root-cuttings, and they hybridize freely. The best alpine kinds are *G. argentum*, with silvery foliage, and pinkish flowers with darker veins; *G. cinereum*, resembling the preceding, except in having greener foliage and darker flowers; *G. macrorhizon*, with purple flowers and a woody root-stock; *G. sanguineum*, a trailing species, with pretty blood-red flowers and blooming from spring till fall. This plant always looks neat and is very easy to grow. Its variety, *Lancastrienne*, is equally handsome, with pink flowers and darker veins.

Amongst the border Geraniums are some very handsome ones. *G. collinum*, purple; *G. Ibericum*, blue; *G. Ibericum palatypetalum*, violet and veined; *G. phœum*, very dark blue, with a white spot at the base of each petal; and *G. pratense*, notably the double blue and single white forms—all bloom in spring, and make a considerable display while they last, and again in the fall, though not so abundantly. *G. Endressii*, rose, one of the best and very useful for cutting; and *G. Armentium*, one of the noblest of all, growing sometimes four feet high, with dark crimson flowers, bloom all the season. The common *Geranium maculatum* grows in swamps, and on dry banks as well, though less luxuriantly. T. D. Hatfield.

Wellesley, Mass.

The Forest.

Forestry in California.—IV.

The effect of forests on rainfall is not as yet sufficiently determined. The total rainfall of the world would, perhaps, be no less were forests not in existence, but it seems to me that an examination of the subject must lead us to conclude that the distribution of the rainfall is affected by them.

Forests continually operate to equalize temperature. The capacity doubles with a mean increase of 23.4 between the freezing point and 100 degrees fahr. Thus in the spring and summer the cooling effects of forests on temperature must diminish the water-holding power of the air. In walking or riding, every one must have noticed the difference in heat between a bare verdureless spot and the shade of trees. This difference is observable even in walking from a dusty road to a grass-covered lawn, thus indicating that the variations of temperature do not depend upon the shade alone. Consequently a current of air saturated for a sandy waste would of necessity, in passing through a forest, part with some of its humidity, owing to the lower temperature. It is for this reason that we see clouds gathered about mountains, when the valleys are under a clear sky.

I have often sat upon the sandy coast of Egypt and watched the sea breeze, full of clouds seaward, clear itself on reaching the coast: all the atmosphere over the water fleeced with clouds, while to landward all was sunshine. Our own coast breezes show the same phenomena; the foggy winds of San Francisco soon become the clear breezes of Sacramento, because the temperature of the latter will not permit the moisture to remain condensed.

I have records of many observations made in our Central States showing that the summer rains are more frequent in wooded districts, and usually follow timber belts and water courses.

There are also a number of observations on record showing that the electrical effect of trees may play an important part in rainfall. Trees attract electrical discharges, as is known in the case of lightning, and coupling this fact with an experiment made with a collander so fine that water merely oozed through, from which, on the application of an electrical current, the water poured out of the small apertures; we must conclude that the effect of trees on rainfall through electricity may be considerable.

Whatever the effects of forests may be on the amount of rainfall, it is beyond doubt that their influence on its delivery is of the first importance.

Trees offer innumerable obstacles to the running off of rain. Their foliage obstructs the force of the rainfall; when this reaches the ground it is impeded by the fallen twigs, leaves and the labyrinth of roots and the humus; by the latter it is rapidly absorbed and held as in a sponge. The roots, at least when decayed, form channels into the lower soil. These impediments cause the water to flow very slowly, and prevent it from gulying out the land and forming accumulative channels. Thus the rain has time to sink into the earth and to replenish the subterranean reservoirs of the springs. The waters percolating out of forests never carry earth in them, as is the case on lands denuded of vegetation. The rate of delivery of a given rainfall from a wooded water-shed is much slower and is much longer continued than from a bare one. The importance of this will be understood when we recall the French experiments at St. Phalaz. At that place there are two water-sheds of nearly equal area and inclination; the one wooded, the other not. From the first proceeds a nearly perennial stream, from the other a dry gully. The period of delivery of flood waters in the first is five days, while in the second the period is only six hours, and it is but fair to presume from the stream in the wooded one that it is a delivery of water that months before fell in rain, which amount of water falling upon the other water-shed augmented its flood.

The first of these water-sheds causes no destruction to the roads nor extensive erosions of the banks of the stream, while the floods from the other wash away the bridges, destroy the roads and roll gravel and boulders into the valley.

Supposing ten billion gallons of water to fall within a given time upon each of these water-sheds. From the first the delivery will extend over a period of five days, or 120 hours, some of it being permanently retained to supply the springs and stream; while from the other the ten billion gallons will flow off in six hours with scarcely any absorption into the soil itself, consequently the delivery of water during a given moment during the flood must be twenty times greater in the

denuded ravine. Every second of prolongation of water delivery diminishes its height, force and danger.

It is in denuded and mountainous water-sheds that torrents are formed. The undetained waters rapidly form channels and erode the land, carrying earth, sand, gravel and boulders in their flow. As the inclination of water-sheds diminishes, the debris is dropped, first the boulders, then the gravel, then the sand, and last the earth and clay.

Standing upon the dykes of the Talfer torrent at Botzen, in the Austrian Alps, I observed the dry bed of the stream to be on a level with the roofs of the three-story houses at Schländers, Kortsch and Lais; the church steeples are lower than the bed of the Gadribach. The water-shed of the Durance, in France, was formerly wooded, as we know by the records of the lumbering corporations that operated upon it. For years it has been denuded, and the river now varies from a vast bed of pebbles and sand to a furious torrent. It has covered more than two hundred thousand (200,000) acres of one of the formerly most fertile valleys of Provence.

In Southern California the same causes are already producing the same results. Fires have been set and are being set by sheep men, which burn the brush and forest and prevent new growth. New torrents in unexpected places have formed, and the old channels, such as the Tejunga, Santa Clara, San Gabriel, etc., are more subject to floods than formerly with the same rainfall.

When we contemplate what has happened in other countries, we cannot but perceive that the mining debris of our central valleys is nothing to what must be expected from torrential action from such a chain of mountains as the Sierra Nevada, with its easily disintegrated formation, should it be denuded of vegetation, and the snows be unprotected and the rains undetained.

The principal sources of danger to be anticipated in this direction are the fires which annually do more and more damage, and the over-pasturage of the mountains, which packs the earth, destroys the humus, and, through the hunger of the half-starved sheep, causes the destruction of the natural reproductive power of the forests by reason of the eating by these animals of the young trees. As has been said, it cannot be doubted that the sheep-men in our mountains do every year a hundred times more damage to the lumber, to the streams and springs, and to the retentive power of the water-sheds than the scanty mountain pastures are worth. Sheep-pasturage should be regulated as it is in Europe and confined to particular forest tracts with such limitations as the condition of the forests requires. In this way the mountain pastures could carry more sheep than now, for under the present system both forests and pastures are being destroyed.

The secondary effect of denudation of mountains and the consequent formation of torrents is the diminution of springs and streams in their summer flow. The rains rushing off rapidly have no time to sink into the subterranean reservoirs, and consequently the springs must fail.

Col. H. H. Markham, a Congressman from Southern California, who introduced the Forestry Bill prepared by the California Board into the last Congress, in a letter to me, says:

"I was born, raised, and have always lived in a timbered country, and have watched the effect of timber upon natural water courses, and I am thereby fortified in my belief that your position is correct. My brother owns a farm in Sheboygan County, Wisconsin, a county heavily timbered. He built a single mill on the creek passing through his farm and ran it by water-power, but as the land surrounding him became shorn of its timber and cultivated, the stream diminished and soon became dry. He sold and purchased another tract in the next county north, and when I first saw it, in 1861, there was a stream running through it containing sufficient water to allow him and others to float double length railroad ties by the hundreds down it to the market. The surrounding country was rapidly cleared, and within six years the stream became dry, with no water, except in rainy seasons."

California uses much water in irrigation, and in the south pays high for the fluid for domestic use. The value of water here, already considerable, must increase with the population. Consequently it is of vital importance to preserve at least the present capacity of the mountain water-sheds, to retard the melting snow and the delivery of rainfall, so that torrents shall not form to destroy the valley lands, and the springs and streams be maintained.

The State of California has no practical forest-system, neither has the Federal Government. The forest lands of the state in private hands are beyond the control of the State Board of Forestry, and the State School-lands and Government-lands in

forests are common to all for entry, pasturage, etc. No forest officer has any control over them, except to arrest for setting fires in the woods, and even in this the circumstances are so adverse to fixing the responsibility for these fires, that, with the utmost efforts, few arrests can be made, and fewer convictions had.

The state sells its land without any reference to the timber upon it. Practically all the school-lands in timber in California are mountainous, and are unsuited to agriculture. Where timber-land is bought in this state the timber is all that it is bought for, and after this is cut it is usually abandoned for taxes, if, happily, all the school payments due the state have been made. On the school-timber sections, in many cases, wood and lumber has hitherto been taken without so much as a by-your-leave from any one.

This Board is, as far as we know, the first official body to ask for an accounting for the school from the wealthy firms who have taken such timber. We have a special agent and assistants now in the field collecting evidence in these and other forestry cases by affidavits. The amount of money involved is very considerable, and belongs to the schools. We are obliged to proceed through the Attorney-General of the state, and hope to secure his co-operation in our work.

The United States land-system only allows a man to acquire 160 acres of forest-land. This is far too little to warrant the building of a modern saw-mill, consequently lumbermen have either cut timber without title to the lands, or used "dummies" to obtain by fraud and perjury what they required. There are doubtless cases in which lumbermen have good titles.

The government has for some time had special agents on the coast to secure evidence against illegal cutters of timber. These officers now have a great number of cases on hand, for the practice of robbing the government lands has been general. One case, that of the United States *vs.* The Sierra Lumber Company, for \$2,000,000 worth of stolen timber, is now on trial, and another involving 600 fraudulent land entries in Mendocino County, in the interest of one foreign firm, is before the courts. These are the leading cases of each kind. These lands are almost all worthless except for the timber on them.

At present there is no management over pasturage here. Robbed and burned everywhere. This is our forest-land system. A few special agents report, a prosecution or two is started, but the government attorneys, from some cause, bring few to trial. Fraud and illegality is at a premium in the lumber industry, and the honest man can hardly tell what to do in it to live and follow the law. Such a system, with such results, must be bad. A vast property is being squandered, the country endangered, and the citizens tempted to violate the law.

What the timbermen want is the timber, not the land. What the people in general need is that the water-holding power of the mountains shall be preserved. A sensible forest-system can sell the timber, while preserving the reproductive power of the forests and the forest itself as to its water-holding capacity, just as is now done in South Australia, India and in Europe. The forest-land ought not to be sold; not another foot of it should be sold by the state or by the federal government.

Santa Barbara, Cal.

Abbot Kinney.

Correspondence.

Hardy Trees.

THE introduction of ornamental trees from Japan during the last ten or fifteen years has claimed so much attention, that it is a matter of interest to determine what limitations of growth are imposed by the often severe climate of the northern United States and Canada. In the vicinity of Montreal the species specially worthy of note at this time are *Ginkgo biloba*, *Circidiphyllum Japonicum*, *Actinidia polygama* and *Paulownia imperialis*. With the exception of *Actinidia*, these are all growing in the grounds of McGill University. The situation is directly at the foot of the Mount Royal slope, and opens out on the east, but is well sheltered on the west. The adjacent buildings afford a somewhat additional shelter on the south, while the surrounding trees seem to break the force of the wind from all quarters.

In October, 1881, a *Ginkgo* was brought from Rochester. For a few years the growth was slow, but it has gained steadily. After eight summers and seven winters the tree now shows an increased strength, which promises well for its future growth, and gives assurance of its probable hardiness. Although the rate of growth has probably been much slower than in its native country, the tree has attained a height of fourteen feet six inches, with a girth of seven inches

at one foot from the ground. During the past summer the main shoot made a growth of four feet four inches—much in excess of the growth of former years.

A second specimen, received from Mr. Charles Gibb, from a locality about forty miles south-east from Montreal, was set in May, 1884, and has now attained a height of seven feet six inches and a circumference of 3.25 inches at one foot from the ground. In each of these cases there has been no winter-killing, and the trees appear to be well established.

The *Circidiphyllum* was planted in May, 1882. In seven seasons of growth it has reached a height of twelve feet four inches, and a girth of seven and a half inches at one foot from the ground. In this case, also, there has been no winter-killing, and the tree appears well established and hardy.

The *Paulownia* was planted in October, 1881. The stems have been killed to the ground each year, but the growth of each season has proved larger than that of the preceding, and this year reached a height of ten feet. The roots, which are quite hardy, appear to be gaining strength each year, and the plant is quite as well established as the one growing in the Botanic Garden at Cambridge.

The *Actinidia* referred to was imported from Amherst, Massachusetts, three years ago, and planted by Mr. Gibb at Abbot'sford. The situation is at the foot of Tamaska Mountain, having a south-eastern aspect. The soil is an open gravel. A slow growth the first year has been followed by a luxuriant growth for the last two seasons, and there is every reason to consider the plant quite hardy.

These facts may derive additional interest from the following considerations:

Montreal is situated in north latitude 45° 30' 17", and as shown by the records of the College Observatory, based upon observations for the last thirteen years, the mean annual temperature is 41.72° F.; relative humidity, 74.3; rainfall, 26.90 inches; and snowfall, 125.3 inches. The lowest temperature recorded since 1880 was -26° F., which occurred in the years 1882 and 1887. It will thus be noted that all of the plants under consideration have, once at least, been brought under the influence of a temperature many degrees below that to which they are subjected in their native country.

Paulownia is a species essentially belonging to central and southern Japan, and therefore to a much lower latitude than this. *Ginkgo* is common throughout the empire with the exception of *Yeso*, where it is rarely seen in the southern extremity. It may be regarded as not extending above the forty-first parallel. *Circidiphyllum* is abundant through northern *Yeddo*, and is everywhere found in the woods among the foot-hills of *Yeso*. *Actinidia* also abounds in the same region, so that both of these species extend northward to the latitude of Montreal. Yet it must be borne in mind that the insular climate of Japan, even so far north as 45°, is much less severe and far more equable than here, while the snowfall is practically the same—the meteorological records for Sapporo, latitude 43° 3' 57" N., for the last six years, giving a mean of 156 inches.

Montreal, October 1st, 1888.

D. P. Penhallow.

Ostrowskya magnifica.

To the Editor of GARDEN AND FOREST:

Sir.—Allow me to correct, for the sake of history, a slight error in one of your late London Letters. This plant flowered for the first time in Europe in 1887, in my little garden at Baden-Baden, from whence the big plants have passed into the hands of Messrs. Veitch & Sons. It is as hardy as any weed, and, though pushing early, the young shoots are not harmed by frost; it is not particular as to soil, but prefers sandy loam, which in any case must be deeply worked, as the root, when reaching full size, descends to a depth of two feet in the ground. Great care must be taken in handling the roots, because they are exceedingly brittle and a rough touch may cause them to decay.

Baden-Baden.

Max Leichtlin.

To the Editor of GARDEN AND FOREST:

Sir.—Is there any better way to rid squash vines of those ugly white worms than to hunt for them and destroy them? My gardener says that if the seeds were planted later the worms would not trouble them. But, in that case, we run the risk of the frost, which caught my vines this year before the squashes were ripe. What shall I do—take the chances of frost, or fight?

Concord, Mass.

A. W.

[Plant when the ground is warm enough, say the middle of May, and cover the hills with boxes over which mosquito netting has been tacked. Leave the boxes on

until the leaves begin to crowd the netting, then remove them and place among the plants corn cobs dipped in coal tar. Do not allow the tar to touch the plants. Redip the cobs once a month until the middle of September. This treatment will ward off all foes except, perhaps, the Squash bug (*Anasa tristis*), and this is rarely so abundant as to work much harm.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—I am inclosing a portion of my piazza for a conservatory. The sashes are so arranged that they can be taken away in the spring. The exposure of this conservatory will be south-east and one of the house chimneys passes up through it. I write to inquire about the best method of heating in an inexpensive manner. Is there any small stove made that I can use which will be fairly free from the escape of gas, and with some provision for the evaporation of water, that the heat may not be too dry? . . . P. B. J.

New York, July 26th, 1888.

[It is not practicable to satisfactorily heat a conservatory with a stove or without hot water or steam pipes. Hitchings & Co., of this city, make a base-burner boiler which is efficient for small work and economical. It heats hot water pipes, and the plan of putting them in should be entrusted to the maker of the boiler or some capable engineer.

There is also a heater much used for warming brooders in Hammonton, N. J., where many young chickens are raised in the winter. It is the plan there to introduce fresh air warmed by passing over pipes of hot water. The apparatus is simple and inexpensive, and would, no doubt, answer the purpose of our correspondent. It is manufactured by Bramhall, Deane & Co., of this city.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—I was at Charlestown, New Hampshire, during the summer, and saw growing Alfalfa, forty pounds of the seed of which had been sent from Colorado and planted there. It had been cut once, and was ready to cut again, and would probably yield five tons or more to the acre during the season. As is well known, it is a very valuable crop for cattle, sheep and hogs in California, and planted on rich, damp land gives large returns. I am told it could be used to great advantage for ensilage, and would like to inquire through your journal why it is not generally grown in the Middle States and parts of New England?

Boston, Mass.

Franklin Hunt.

[Crops of Alfalfa larger than that reported by our correspondent are not rare in the Middle and New England States. At the New York Experiment Station it starts well, does not winter kill, gives two, and even three good crops a year, thrives on the heaviest soil and endures drought admirably. The New Jersey Station reports that Alfalfa can be cut three or four times a year for five or six years in succession, yielding as heavy a crop per acre as fodder Corn. A gentleman near Boston writes that he cannot dispense with it as a soiling crop. And yet, for some reason, the use of Lucerne has never become general, although it was successfully cultivated nearly 100 years ago in the Middle States. The fact is that it very often fails. At a farmers' meeting in Schenectady last spring, Colonel F. D. Curtis replied to some one who marveled that this plant was so generally neglected by saying, that once in about twenty years agricultural writers unite to commend Lucerne and quote many instances of success. But the fact that the plant soon drops out of notice again is proof that it lacks some quality essential in a first-class forage plant. Secretary Guld, of Connecticut, says that repeated trials have been made with Lucerne in that state, but they have all resulted in failure. Still, the occasional successes are so striking that the plant is worth trying in a small way on every farm. Some authorities hold that an open, porous subsoil is essential to the best growth of this plant, which roots very deeply. The complaint is often made that a good "catch" of seed cannot be secured. But this could be remedied by care in preparing a well pulverized but

compact seed-bed. It is often sown broadcast, but the young plants are small and feeble, and easily smothered by weeds. The seed should, therefore, be sown in drills that are far enough apart to admit cultivation between the rows until the plants are established. Probably a lack of cultivation and sowing the seed on a soil that rests upon an impervious hard pan, are the most frequent causes of failure. But, after all, it must be admitted that agricultural authorities are not prepared to speak with positiveness of the conditions which are essential to success with this crop.—Ed.]

Recent Plant Portraits.

Eucalyptus calophylla, *Revue Horticole*, September 16th; the Australian Red Gum, which Monsieur André recommends for general cultivation in southern Europe, for its ornamental qualities.

Cattleya labiata, var. magnifica, *Gartenflora*, September 15th.

Quesnelia Wittmackiana, *Gartenflora*, September 15th.

Pentstemon rotundifolius, *Gardeners' Chronicle*, September 8th.

Pinus Pyrenaica (vera), *Gardeners' Chronicle*, September 8th.

Arauja graveolens, *Gardeners' Chronicle*, September 8th; a beautiful, white-flowered stove-climber, closely allied to and requiring the same cultivation as Stephanotis.

Rhododendron Collettianum, *Gardeners' Chronicle*, September 15th; a dwarf species from the Kuram Valley of Afghanistan.

Convolvulus tenuissimus, *Gardeners' Chronicle*, September 15th.

Chironia peduncularis, *Gardeners' Chronicle*, September 22d.

Pentapera sicula, *Gardeners' Chronicle*, September 22d.

Passiflora Miersii, *Gardeners' Chronicle*, September 29th.

Ursinia pulchra, *Gardeners' Chronicle*, September 29th.

Ruapellia grata, *Gardeners' Chronicle*, September 29th.

Botanical Magazine, October, *Howea Belmoreana*, t. 7018; this, the *Kentia Belmoreana* of many gardens, is a small and graceful cool-house Palm from Lord Howe's Island, off the eastern coast of Australia.

Rhododendron Collettianum, t. 7019; an alpine white-flowered species, from the high Afghan mountains, introduced by Dr. Aitchison; of considerable horticultural value.

Iris Alberti, t. 7020; a handsome species, with large, bright lilac flowers, lately discovered by the Russian botanists in the mountains of Turkestan, whence it was introduced into cultivation by Dr. Albert Regel, whose name it bears. Its botanical interest is considerable, as Mr. Baker points out, in its rudimentary crest and fully-developed beard down the claw of the outer segments of the perianth, thus forming a connecting link between the sub-genera, *Pogoniris* and *Evansia*.

Disa racemosa, t. 7021; a very handsome Cape species, with bright rose-red flowers.

Asarum macranthum, t. 7022; a native of Formosa.

Recent Publications.

Entomology for Beginners, for the use of young folks, fruit-growers, farmers and gardeners. By A. S. Packard, M.D., Ph.D. New York: Henry Holt & Co.

The modest title of this book hardly does justice to its scope. Many amateur entomologists who are neither young folks nor beginners will find instructive hints to aid them in collecting and rearing insects, in preserving and dissecting them for study, mounting them for the microscope and preparing them for the cabinet. It is for beginners, however, that the book has been primarily prepared, and those who wish to enter upon a course of serious study cannot find a better treatise upon the elements of entomological science. According to the classification adopted, the class of insects is divided into sixteen orders, beginning with the lowest or wingless order, Thysanura, and ending with the most complicated group, the Hymenoptera. This agrees not only with the succession of insects so far as this is known in geologic time, but it probably coincides with the order of evolution. This change in classification seems to grow naturally out of our increased knowledge, but Professor Packard points out that the adoption of a larger number of orders is most convenient in view of the great number of species now existing. There are something like a million of these, and it is unnatural to crowd them all into the old Linnæan orders. The chapter on

"Economic Entomology," gives brief accounts of the more injurious of the insects which annually destroy perhaps \$100,000,000 worth of the agricultural products of the country, together with the best means of checking their ravages. Throughout the entire work there are abundant references to other books, and there is a valuable classified catalogue of the books needed by the entomological student. The copious glossary and full index adds much to the practical value of the book, and altogether it ought to prove useful as a text-book for schools and colleges, and especially for agricultural colleges, and it will no doubt encourage a more general and more careful study of the modes of life, the transformation and the structure of insects, than has yet been given to the subject in this country.

Notes.

Apple blossoms are not unknown in autumn, but they are rarely seen in profusion. Mr. Dawson writes that in the last week of September one tree of *Pyrus baccata* was nearly covered with bloom.

The experiments made in the cultivation of the Cinchona on Mount Bavi, in the French province of Tonkin, having proved entirely satisfactory, it is now proposed to establish large plantations of these trees there.

The Philadelphia Chrysanthemum Show, which opens on the 13th and closes on the 16th of November, promises to be unusually fine, both in cut flowers and specimen plants. The cut Roses at that time will also be finer than are now to be had.

The French Society of Acclimatation recommends the cultivation of *Crocus Haussknechtii*, a Persian species for the production of saffron, on account of its superiority over the common *C. sativas* generally cultivated in some parts of the Levant for this purpose.

The old Scotch Rose (*Rosa spinosissima*) is now the most attractive of the black fruited kinds, and the wonderful shades of orange and scarlet worn by the hips of *R. rugosa*, *R. acicularis*, *R. rubrifolia*, *R. alpina*, *R. cinnamomea*, *R. subglobosa*, and *R. nitida*, ought to insure a more general use of these plants for the beauty of their fruit alone.

Mr. P. W. Reasoner died at his home in Manatee, Florida, of yellow fever, on the 17th of September. Mr. Reasoner, who was only in his twenty-sixth year at the time of his death, was one of the most active and progressive horticulturists of the South, and had already won for himself a reputation which extended beyond the limits of his adopted State. He was a welcome and valued contributor to the pages of this journal.

We learn from the *Gardeners' Chronicle* that, under the name of *The Orchidonne*, a society of amateur Orchid-growers was founded in Brussels on the 23d of September. The object of the new society is to foster the taste for, and promote the culture of, Orchids. This is to be effected by meetings and monthly exhibitions, lectures, and by a great annual exhibition, the first of which will be held next spring. There are seventy foundation members in the society.

The most interesting feature of the horticultural display made in Springfield, Massachusetts, last week, in connection with the Bay State Agricultural Society's Exhibition, was a collection of 250 varieties of Potatoes, including many seedlings, staged by Mr. G. C. Bond, of Holden, Massachusetts, and raised without other fertilizer than the Soluble Pacific Guano, manufactured by the Pacific Guano Company, of Boston. It is believed that this is the largest and most interesting collection of Potatoes ever exhibited by one grower in the United States.

The interest now taken in the cultivation of new and rare Orchids in this country, and the prices which Orchid growers are willing to pay for them, is illustrated by the fact that dealers are willing to incur enormous expenditures to satisfy the demands of the trade. Messrs. Siebrecht & Wadley, of New York, have had for nearly a year a collector traveling in Brazil for the special purpose of obtaining a supply of the rare autumn-flowering form of *Cattleya labiata*, besides other collectors constantly seeking for novelties in different regions of Central and South America.

The great Orchid growing establishment of the Messrs. Sander, at St. Albans, England, of which mention has often been made in our columns, has had a branch establishment

in this country for the past two years, their business being conducted in Jersey City, under the superintendence of Mr. I. Forstermann. Mr. Sander recently arrived in New York, and has selected a site at Summit, N. J., where he is building a number of Orchid houses. It is his purpose, before returning to England, to visit all the fine collections of Orchids in the western as well as in the eastern States.

Symplocos paniculata, a fine Japanese shrub which was described while in bloom in "Notes from the Arnold Arboretum," is now thickly covered with berries in small bunches. The fruit is a bright ultramarine blue, and makes the shrub conspicuous among those which are valued for ornamental fruit. Another comparatively new shrub, *Panax sessilifolium*, is now showing large heads of deep black fruit, which hangs on the branches long after the large compound leaves have dropped. The old-fashioned Snowberry is one of the few shrubs with white fruit. When growing in a deep, rich soil it has a rare beauty in autumn, and is a graceful plant at all times.

Some exceptionally large trees, of which mention was recently made in *The Garden* (England), are: A Yew tree in the churchyard at Down, which, at three feet from the ground, has a girth of twenty-eight feet, and preserves its branches and foliage well, although its stem is hollow and crumbling; a Purple Beech at Holwood House, which, at three and a half feet from the ground, measures eleven feet, with a height of fifty feet and a branch spread of seventy-five feet diameter; a Cut-leaved Alder on one of the Hollydale lakes, which has a circumference, at a yard from its base, of six feet and a branch spread of forty-five feet diameter; and an Ailanthus (a tree which is not often seen of large size in England) which grows at Down House, the former residence of Charles Darwin, and measures six feet and nine inches at two feet from the ground. A Eucalyptus, which was planted in 1880 in the gardens of Earl Jersey at Baglan House, is noted as having already reached a height of twenty-nine feet.

No shrub has been more popular this year than *Hydrangea paniculata grandiflora*. It has appeared in every direction, grown in pots and in beds, in single specimens and in groups often of very great extent, in cottage gardens and on villa lawns, and profusely in almost every large country place. Very showy when in bloom and blooming late in the season, it has certainly strong claims to the favor it has won. Yet it should, perhaps, be called an effective rather than a really beautiful plant. To some eyes the singular color of its flower panicles, shading from cream color to a dull pink, is its greatest attraction; but to others it wears an unwholesome look, as though a tint which should be stronger, or, at least, clearer and purer, had been imperfectly developed. This, however, is a question of taste. The only sure fact is that it is very possible to have too much even of a good thing, and that in certain places—as at Newport—there have undoubtedly been too many of these Hydrangeas. In passing a hundred villas it became very tiresome to see a hundred successive clumps of so conspicuous a plant.

At a meeting of the Social Science Association, held in Saratoga during the first week of September, a paper was read by Dr. Lucy M. Hall, of Brooklyn, on "The Sanitary Condition of Country Homes." Sixty-five farm-houses of an average type had been carefully examined by the speaker in the New England, Middle and Western States, and the conclusions drawn from her survey are well worthy of note, both by the farmer, who lives in such homes all the year round, and by the inhabitant of cities who depends upon them to furnish himself and his family with refreshment for mind and body during the summer months. Over half these houses, Dr. Hall asserted, were built on wet clay soil, and it seldom appeared that any regard whatever had been paid to questions of subsoil and drainage. Fifty-five per cent. of the houses, again, were too closely shaded, sunlight being excluded from almost all their windows or from every one. Piazzas were likewise too extensive, their roofs still further excluding air and light. Nor had the character of shade-trees been more carefully considered than their number and proximity. Barns and stables were found in much too close connection with the house, their average distance being in New England not quite twenty-nine feet. The result of all these various ways of disregarding sanitary conditions was shown by the "clinical history" of these sixty-five farm-houses for a period of several years. Fifty-five per cent. in New England had a record of typhoid fever, and ninety-three per cent. of lung troubles and diphtheria, while rheumatism was everywhere.

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Taste in Florists' Arrangements.

NOT long ago we stated that florists and nurserymen might exercise a wholesome influence on public taste by paying greater heed to the intrinsic excellence of flowers and plants than to their novelty only. Another way in which they can render service in the same direction is in their arrangement of cut flowers and decorative plants. Public taste has greatly improved in this matter during the past few years, and the fact is chiefly owing to the influence of our florists, who have offered their customers better and better things before they were conscious of wanting them. The use of "set pieces" is growing less common; the wiring of short-stemmed flowers, once the universal rule, has been largely abandoned in favor of loose, natural-looking arrangements of long-stemmed blossoms, as much more durable as they are more beautiful; boxes of cut flowers, left for arrangement to their recipient's hands, are, perhaps, more frequently chosen for gifts than anything else, and whatever the disposition that is made of flowers, the necessity of an intermixture of foliage to subdue and harmonize their colors is becoming more clearly realized.

All these welcome facts are largely due to the development of good taste in the florist himself. Yet there is much still for him to learn—many needed lessons which he can impress upon the public. It is important, for example, that when the selection of loose, cut flowers is left to him, such varieties shall be chosen as are not merely individually fine, but well adapted for association with each other; and that attention should be paid to durability as well as to beauty. Of course, when arrangements for some special occasion, as a dinner or a ball, are in question, momentary effectiveness may outweigh other qualities, under the circumstances; but, in general, flowers should be so disposed that they can be preserved for a reasonable length of time. The demands of beauty alone would suffice to enforce this advice. We are so well aware that if cut blossoms are deprived of moisture they must immediately perish, that we involuntarily feel a sensation of distress which interferes with our enjoyment of their effect when they are visibly deprived of it. To place

them in baskets filled with moss is sensible, and therefore satisfactory, but to tie them on the cover of a basket or in bunches on the handle is not sensible, and therefore is in bad taste. A true lover of flowers, receiving such an arrangement, is tempted at once to take it apart and save the flowers—and to have his work immediately pulled to pieces cannot be a florist's wish.

As regards the association of foliage with flowers there is still much to be learned. It does not suffice that the green selected shall be charming in itself; it must suit the character of the flowers it accompanies or the effect will not be good. *Asparagus tenuissimus* and Maidenhair Fern are both lovely things, but neither of them suits all kinds of flowers, as the fashion of the moment seems to declare. Delicate flowers harmonize with the delicacy of such foliage; but the same is not true of the massive Roses and flaunting Orchids, with which we constantly see it grouped. The foliage of the flowers themselves is the best guide in the selection of that which shall be arranged with them. It need not be literally this, but it should be something analogous in character; and the cultivation and introduction of various kinds of foliage suitable for association with the flowers we most commonly employ in winter is a work worthy of the best energies of some intelligent florist.

"Set pieces" are, however, the most difficult things with which a florist has to deal. Theoretically they are all wrong; in fact they seldom seem even approximately right; and there are probably many lovers of flowers who wish they might be forever banished from sight. On some occasions they may seem to be indispensable, and then they should be as simple as possible in both form and color. A wreath or cross or a flat bunch from the top of which graceful sprays of foliage project, is infinitely better than a broken column, an inscribed cushion, an anchor, or any of those innumerable devices in which flowers are used, not for the sake of their own beauty, but to portray some object more or less allegorical. A wreath all of Violets or Pansies or white flowers, or of white flowers sparingly intermingled with those of a single color, is far more beautiful than one in which several colors are intermixed; one or two varieties of white flowers are far better than many varieties; and even in a "set piece" care should be taken to secure at least an approach to naturalness in the placing of the blossoms, and to display the beauty of their individual forms by some intermixture of foliage.

It need hardly be added that in any case when flowers are employed for decorative purposes, reliance should be placed on their beauty exclusively, and no attempt should be made to enhance it by the addition of other factors, as, for example, stuffed birds or masses of ribbon.

We are glad to be able to say that no florists in the world show to-day so much skill and good taste as ours. Nowhere, except in Paris, is there even an approach to the beauty of the flowers which we can buy in winter, or of the arrangements which we can have prepared for us. If we look, for instance, at the illustrations in English and continental horticultural papers we find them about on a level with those which were common here some ten or fifteen years ago; the "fancy basket" is there still in its prime, especially in Germany, and the most grotesque and puerile devices are praised as marvels of ingenuity and charm. We are far ahead, in our appreciation of simplicity and naturalness, if we take the testimony of our horticultural literature and the work of our best florists as the standard.

What is a Tree?

THIS question, although often asked, is not easily answered. There are shrubs so tall and so vigorous that they may well be considered trees, and there are trees so low and of such feeble growth that they hardly deserve the name of trees. Really there is no hard and fast line

which separates a tree from a shrub, and any classification of plants which attempts to separate trees from shrubs must be purely artificial, and, therefore, unsatisfactory. The best definition of a tree we have seen, and one that goes a long way towards answering this perplexing question, was presented by Mr. B. E. Fernow to the Botanical Club of the American Association, at its recent meeting at Columbus. "Trees are woody plants, the seed of which has the inherent capacity of producing naturally, within their native limits, one main erect axis, not divided near the ground, the primary axis continuing to grow for a number of years more vigorously than the lateral axes, and the lower branches dying off in time," is Mr. Fernow's definition of a tree, and it is a sound and philosophical one.

Planting for Autumn Effect.

Planting with reference to making the most of the autumnal change in the color of the foliage of many of our North American plants, and to producing brilliant pictures by harmoniously grouping together trees and shrubs which are specially beautiful at this season of the year, is a matter which has received as yet little attention. The field, nevertheless, is an inviting one, and a careful study of the material at the disposal of the American planter for the production of autumnal effects will well repay the landscape-gardener and the planter. Different species must be studied with reference to the colors they assume in autumn, and if the best results in picture-making of this sort are to be attained, the peculiarities of coloring in individual trees must be taken advantage of. With some kinds of trees, and they are often the most brilliant at this season of the year, like the Flowering Dogwood, the Tupelo and the Liquidambar, all individuals assume the same autumn livery, and there is little choice, therefore, between individual trees in this respect. In others, individuals differ greatly in the time of the turning of the leaves and in the colors they assume. Every one has noticed, in the case of the Sugar Maple, that on some individuals the leaves are all golden, while on others a portion are scarlet, or that sometimes the leaves on a single branch turn scarlet while the remainder of the tree is still green. Individuals of the Scarlet Maple differ even more than Sugar Maples in this respect. On some the leaves are pale yellow; on others they are green with scarlet margins; others are brilliantly scarlet; in western Massachusetts there is one tree of this species, now known from one end of the Commonwealth to the other, whose leaves turn from green first to deep, dark purple, and then to the most brilliant scarlet. There are individuals of the White Elm whose leaves barely change color at all before falling; in others they are bright yellow for many days. Individuals of the White Ash vary remarkably in this way. The leaves upon some trees turn to a deep, bronzy purple peculiar to this Ash, while in others they turn pale yellow and never show the real autumnal beauty of the tree. The Scarlet Oak is generally constant in its autumn colors; but individual White Oaks vary considerably, and the Black Oak varies still more.

It is noticed that the autumnal coloring of an individual tree, or even of a particular branch of a tree, is constant. If the leaves on a particular branch of a Maple tree assume a particular color one year, they will continue to do so, year after year, as long as the branch exists. If the leaves of a certain Oak are more brilliant than those of any of its associates, they will continue to be so year after year. Autumnal effects of foliage, as a whole, vary in different years, but whether, as a whole, its brilliancy is greater or less, certain individuals will always excel others in effects of color.

Planters, therefore, can well select and perpetuate these individuals in the same way that trees with abnormally colored leaves, like the Purple Beech, or with unusual habit of growth, like the Pyramidal Oak, have been perpetuated. The nurseryman who will propagate by grafting Maples or Oaks or Elms, selected with reference to

the autumnal tints of their foliage, will open the way to more effective plantations than have yet been made in this country, and will reap the reward of his intelligence and enterprise. The field, so far as we know, is entirely a new one.

The English are gradually being led—if we may trust the words of many writers in their horticultural journals—to abandon that bedding-out system which has long almost exclusively prevailed in their gardens, and to give more attention to hardy plants and informal arrangements. As a reaction in taste almost always, at its outset, leads those who favor it into extreme opinions and statements, we are not surprised to find that many of these writers go too far in their condemnation of carpet and pattern beds, granting to them no beauty and seeing no situations in which their effect is appropriate. Such is the case with a writer in a recent number of *The Garden*, whose interesting article is called "English Flower Gardens." Nevertheless, much that he says is well felt and well expressed, as the following brief extracts will show:

"It is evident that there is a growing taste for a more natural style of planting and a freer use of hardy plants in our flower gardens. It takes time to break down prejudices, even when they have little to recommend them. A transition period is necessary in many cases, and this we have been going through lately, as shown by the use of 'dot' plants on our hitherto flat and monotonous beds; but even this is not satisfactory, and the whole system must be swept away to make room for a better. Many and great are the difficulties which beset those of us who have at heart the better planting of our gardens. While deprecating the sameness and patterns of the bedding-out system and the extensive use of tender plants, we must not run to the other extreme and exclude many of our best plants on the plea that they will not stand our inclement winters out-of-doors. As well discard those hardy annuals which will not reproduce themselves in the soil where the seed fails without some sort of preparation, and the perennials, which want an annual division and an occasional renewal or manuring of the soil. . . . Variety is one of the great charms of the garden, of which we must not lose sight, and I, for one, should be sorry to discard many tender things. Who is there amongst us, having once seen a good bed of Heliotrope, would be induced to do without it in the garden? And yet it is one of our most tender plants. . . . But there are other gardens which have none of this formality, or where it can be easily swept away, and these are the places that gladden the hearts of those who are striving to give us something better than lessons in geometry, or in making thousands of plants look as nearly as possible like one. In these we shall see artistic grouping of flowering and ornamental foliaged plants here, there and everywhere, except in the positions most often selected, where they break up and spoil a fine stretch of landscape. . . . There are many gardeners who thoroughly understand the requirements of the plants under their care; but all are not able to make the best use of the material at hand, and before our gardens can be made beautiful this knowledge of plant life must be combined with the eye of an artist and the means of carrying out the requisite work. The great dislike to change arises from the fact that unhappy combinations may result in something offensive to good taste. The average 'bedding-out' gardener makes exact copies of some beds seen elsewhere and is safe. But this is not possible or desirable in artistic gardening, the end and aim of which should be the production of beautiful living pictures not seen quite in the same way elsewhere; they should be, in fact, masterpieces instead of copies."

Window Gardens.

THE practice of decorating windows with growing plants is growing in every part of the country, and a great diversity of taste is displayed. In some places we find, in a box that occupies the window-sill, a miniature flower garden, as great a variety as possible, and so crowded that individuality of form or color is entirely lost. The result is simply confused color, which is anything but pleasant. In another section we find boxes filled with Coleus, and where but one or two colors are used the effect is very good. With but one variety of Coleus, and the plants well grown and kept in proper shape, a window-box can be made beautiful. In other places we find boxes of Palms, Dracænas and the like, and these are often beautiful. Again we see boxes filled

with Ferns, and for shaded places nothing can be better. The Fern family is very large, but its members are usually congenial, and harmonize well together. It is an interesting fact that each town has a predominant style of gardening and window-gardening. Every one apparently follows the first striking example, and this emphasizes the importance of a good beginning. If the local florist makes a tasteful display, or some of the pioneers in planting give object-lessons in simplicity and naturalness of material and arrangement, the town will show this influence for years in attractive streets and lawns.

In London more good taste is displayed in the arrangement of window gardens than in any city or town I have ever visited. The first thing that attracts attention is the contrast of positive, well-defined colors; the next is the plainness of the boxes that contain the plants. These are conspicuous for what they do not show—color; in fact, they are made to hold the plants, and not to be seen. The plants principally used are the Paris Daisy (*Chrysanthemum frutescens*), Shrubby Calceolaria and some semi-double scarlet Geranium. The arrangement is quite simple. Usually there is an outer row of the Yellow Calceolaria; through the centre are, say, three scarlet Geraniums; the remaining room is filled with the Chrysanthemums. For window gardens, as well as for pot plants, the English florists grow the Chrysanthemum to perfection; they keep it dwarf and stocky, which is done by cutting well back when young, and never advancing the plants to a pot more than six inches in diameter. Occasionally a little Lobelia may be seen in some of their arrangements, but this only tends to intensify the other colors, making each more prominent.

These boxes are simple and inexpensive, and for effect nothing can surpass them. All the plants are not only adapted to the purposes for which they are used, but succeed admirably in their climate, making a cheerful contrast to the soot-colored houses. The use of these boxes is very general; in some of the streets nearly every house has its window-garden or box of flowers; I noticed many houses in which every front window had its flower-box. Flowers are not confined to the balconies of the great houses. In the humbler houses of the middle and lower classes the windows are bright with bloom. Only a few plants are seen in any one house, but wherever seen, the Chrysanthemum is the prominent plant, and, as there grown, a better need not be looked for.

C. L. Allen.

The Rainfall on the Plains.

TO demonstrate satisfactorily the occurrence of changes in climate is one of the difficult problems of meteorology, yet widespread beliefs in the occurrence of such changes have become prevalent in this country, and are firmly held by large numbers of the people.

Of such generally accepted beliefs is the one prevalent in Connecticut—that the spring is much later than it was a half century ago. The older farmers relate that when they were boys it was customary to begin planting corn on the day following General Training day, whereas, now, this stage of the farm work is delayed by the prolonged winters to a much later date.

A similar popular belief in a climatic change, current west of the Mississippi, is that their rainfall is increasing, and the cause of this increase is attributed to the extension of cultivation.

The widespread prevalence of this general impression is of itself an interesting and important fact, and claims the most respectful attention. For, if founded in accurate, although not on instrumental, observation, it will have a *raison d'être* that will go far to establish its truth. My own inquiries, however, have shown that, in general, the current belief in an increase of rainfall does not rest so much on observation as on a fallacious argument. Based upon the reports of early explorers, all the country west of the Missouri was believed thirty years ago to be a "Great American Desert," in which agriculture would always be impossible because of the insufficiency of rain. Eastern Kansas was then settled, and yet, for the first ten years, few believed that the frontier of settlement could ever be extended west of Topeka.

The stream of immigration, however, has pushed westward, and, as yet, no absolute limit has been reached. Holding to the essential truth of their old assumption, the older settlers explain this westward advance of agriculture as having been rendered possible by an increase of rainfall gradually produced by the tillage of the soil and the growing of trees. But this argument is fallacious because of its defective premise. The possibilities of the country for agriculture were underestimated by reason of the lack of the proper experience for forming an opinion. Cultivation has greatly added to the economy of the

rainfall, and has rendered possible the growing of crops on previously barren ground. Growth of grasses, tree planting, the prevention of disastrous prairie fires and general cultivation—these are the agencies that have wrought a change in the conditions of agriculture in Kansas.

All the change that has taken place may have been effected without an increase in rainfall of a single inch. The evidence of a change in the amount of rainfall cannot be concluded from changes in agricultural possibilities that have been brought about by an indefinite number of interacting causes, but must be based on direct and trustworthy observation.

The observational data available as evidence on the subject are very meagre, but conflicting views as to the conclusions to be derived from them have been abundant. During the past year especially there has been an active revival of interest in the question, and a galaxy of eminent writers has taken part in the discussion.

Upon the negative side of the question relatively little has been written, and for the reason, no doubt, that the burden of proof rests with those who believe in the increased rainfall.

Ex-Senator Dorsey, in the *North American Review*, says: "Nothing is more idle than the talk that can be heard on all sides respecting the rainfall increasing within what is known as the arid region. The rainfall has been accurately recorded as far back as 1847 at Fort Riley, Kansas; Fort Bent, Colorado; Santa Fé, New Mexico; Fort Bridger, Wyoming, and Salt Lake City. These records show that there has been no increase whatever in the past forty years.

"I challenge those who persist in claiming that what is now known as the arid region will sooner or later become productive by the natural rainfall to show a single instance anywhere on the surface of the earth where such a result has been attained. There has been no such climatic change on this or any other continent."

The five stations quoted by ex-Senator Dorsey as exhibiting no rainfall, are, however, with exception of Fort Riley, and perhaps Fort Bent, quite outside of the district over which the increase is generally believed to have taken place, and so are not pertinent evidence in the case. The observations at Fort Riley extend back to 1854 (not 1847), and exhibit an increase of two inches in the average annual rainfall of recent years over that of the first decade.

A similar conclusion to that of Mr. Dorsey has been presented by the eminent geographer, Mr. Gannett, in a recent article in *Science*, which has already received notice in the columns of this journal. He divides the observations from each of twenty-six stations (mainly in Kansas and Nebraska) into two equal terms, and adds the yearly rainfalls in each term separately. These two sums show no appreciable difference, whereupon he concludes that the observations show no increase of rainfall. This method pursued by Mr. Gannett might easily fail to show an increase of rainfall even if one existed. One-half the stations have short series of from three to twelve years in length, while the remaining are from twelve to twenty-eight years. If there has been an increase of rainfall it is to be discovered by separating the observations so that each portion shall cover different periods of time. Thus, if it is desired to ascertain whether the rainfall has been greater during the past ten years than during the period from 1840 to 1850, observations taken recently must be compared with those taken during the earlier period.

It is difficult to see how the mixture given by Mr. Gannett can possibly throw any light on the subject.

Mr. Charles Francis Adams, in the *New York Nation*, and General Greely in *Science*, are each disposed to believe that the rainfall has increased, but do not give any reasons that can properly form the basis of an argument. General Morrow, in an address on October 5th, 1887, at the Sidney Fair, advocated the popular view of an increase of rain due to cultivation, with the following argument: "I have always thought that there was an abundance of moisture in the clouds of the interior section of the country, but that conditions favorable to its precipitation in the form of rain and dew were wanting. The earth and the sky are reciprocal in their relations. They give to and take from each other. A parched desert having nothing to give in return receives no moisture from the passing clouds."

This is an attractive, poetical view, but it can be considered as a valuable argument upon the question only after it has been shown to have a rational, physical foundation.

The most valuable contribution of the year, in my opinion, is that by Professor Harrington, in the *American Meteorological Journal* for December, 1887. A careful comparison of the rainfall charts, based on the recent Signal Service observations, with the charts contained in Blodgett's "Climatology of the

United States," shows an unmistakable westward advance of the isohyetal lines over the western plains. By this method all of the data up to 1855, consisting mainly of the records at the military posts, is utilized for the first period, and the Signal Service records from 1871 to 1883 for the second period. The certainty of the conclusion seems, therefore, to depend mainly on the degree of accuracy with which the meagre data available in 1855 truly represent the average rainfall of so great a district, and on the comparability of these quite different series of observations. As a test of the latter question I have examined the contemporaneous records made at Fort Leavenworth and at the Signal Service station in Leavenworth City for the twelve years from 1871 to 1883, and find that the average annual rainfall observed at the fort was 33.0 inches, while that at the Signal Service station was 38.5 inches. To what this large discrepancy between the two sets of observations is due is not easily determined, but its most probable source apparently lies in the greater care exerted by the Signal Service to measure small rains and showers. If this be the true explanation, it applies to the comparison of all fort records with Signal Service records, and the conclusion of an increase of rainfall obtained by Professor Harrington would be quite vitiated.

The observations from Fort Leavenworth extend over nearly fifty years, and thus constitute the most valuable series west of the Mississippi River. This record exhibits an increase of two inches in the mean of the last two decades over the mean of the first two—an amount almost too small to be considered as giving evidence of any real or important climatic change. In fact, the rainfall record in many eastern cities shows an increase much greater than any that can be found in the West. In Philadelphia during the past forty years the measured rainfall has increased six inches, and at Providence and New Bedford eight inches. Has cultivation of the soil, tree-planting, railroad building or settlement been the cause of this large increase? And if not in these eastern cities, why is it so certain that they have been the cause of the possible increase of an inch or two in Kansas?

If settlement and cultivation and forest-growing can measurably increase the rainfall, how is it to be brought about? What is the *rationale* of the process? Who has shown that the assigned cause is adequate to produce the effect claimed for it? These important questions are seldom squarely faced. After very careful study of all the arguments and data that I have found it seems to me that the evidence of any material increase of rainfall in the West is very inconclusive, and, second, that, if such increase should occur, there would be, with our present knowledge, no sufficient evidence of its being due to settlement and cultivation.

Geo. E. Curtiss.

Parks and Squares of United States Cities.

THE nineteenth volume of the Final Reports of the Census of 1880, only lately distributed, completes the "Statistics of the Cities of the United States," and enables us to view the condition of 180 cities of the Union in respect to those necessities of modern town life—public parks and squares.

Two hundred and ten cities are enumerated. Of these thirty make no report concerning their public spaces, and may perhaps be presumed to own none, while forty state outright that they possess no public grounds whatever. Some surprisingly large towns appear in this latter class; for instance, Paterson, New Jersey (population, 51,000), Scranton, Pennsylvania (46,000), Wilmington, Delaware (42,500), Wheeling, West Virginia (31,000), Trenton, New Jersey (30,000), and many smaller but bustling places like Fort Wayne, Indiana, Poughkeepsie, New York, and Topeka, Kansas. Since the Census year several of these forty cities have taken steps to provide themselves with public spaces of one sort or another.

Turning now to the 140 cities which report one or more public grounds, we notice first the universal abuse of the word park. It is applied to every sort of public space, from the minutest grass-plot to the race-track or the fair-ground. The strict meaning of the word is completely lost. Hereafter we shall have to speak of country-parks when we wish to designate those public lands which the word park alone ought by rights to describe—*i. e.*, "lands intended and appropriated for the recreation of the people by means of their rural, sylvan and natural scenery and character."

Country parks are sometimes of small area, as when some striking glen, or river-bank, or cañon is preserved in its natural state (would this were oftener done!)—but generally an area of at least fifty or one hundred acres is required to provide a natural aspect. Smaller spaces can satisfy many of the de-

sires of the crowded city people—can supply fresh air and ample play-room, and shade of trees and brightness of grass and flowers—but the occasionally so pressing want of that quiet and peculiar refreshment which comes from contemplation of scenery—the want which the rich satisfy by fleeing from town at certain seasons, but which the poor (who are trespassers in the country) can seldom fill—is only to be met by the country park. If a few of the twenty-six cities which reported themselves in 1880 as possessed of large tracts of land have put these lands to uses for which small areas would have served as well or better—if they have given them over to decorative gardening, to statuary and buildings, or to other town-like things—they have made (unless the circumstances are peculiar) an extravagant mistake. For large open spaces close to cities are excessively costly, and one such interferes with traffic in far greater degree than do many small areas, so that no town can properly afford to own a large tract unless for the express purpose of providing refreshing natural scenery.

The accompanying table of the twenty-six cities which reported park lands of fifty acres and upwards presents curious contrasts. The first column gives the number of inhabitants per acre of park—which is the basis of the order of the names—the other columns the population and the park acreage:

18 Macon,	13,000	720
22 Council Bluffs,	18,000	600+104+90
166 Detroit,	116,500	700
172 St. Paul,	41,500	240
175 New Britain,	13,000	74
176 St. Louis,	350,500	1,372+276+180+158
182 Binghamton,	17,500	96
222 San Francisco,	234,000	1,050
280 Bridgeport,	28,000	50+50
281 Chicago,	503,500	593+372+250+200+185+180
309 Philadelphia,	847,000	2,740
310 Baltimore,	232,500	693+56
410 San Antonio,	20,500	50
417 Omaha,	30,500	73
442 Buffalo,	155,000	350
508 New Orleans,	216,000	250+175
680 Portland, Me.,	34,000	50
685 Cincinnati,	255,000	206+164
833 Indianapolis,	75,000	90
907 Fall River,	49,000	54
940 Allegheny,	79,000	84
1019 Providence,	105,000	103
1122 Brooklyn,	567,000	505
1213 Albany,	91,000	75
1400 New York,	1,206,500	862
3424 Boston,	363,000	106

Little Macon's large park was the gift of the State. It is mostly in large forest trees. Boston, at the other end of the list, boasts uncommonly attractive suburbs, which have served some of the purposes of a park; but she has lately begun work upon a real park of more than 600 acres.

Of small public grounds there appears to be an equally various provision. In New England many cities possess the remains of old town commons—for instance, Nashua (13,000) has forty acres in North and South Commons, and Newburyport (13,500) has the same; while Boston, Salem, Lynn and other places own larger or smaller areas of like origin.

At the founding of Philadelphia, five public squares of about six acres each were carefully reserved; but the example of the founders has been wofully forgotten by the builders of the great city of to-day. Savannah has done better, for she has continued the city-plan devised by her first colonists, and in 1880, with a population of 31,000, she had thirty acres in twenty-three public spaces, besides a ten-acre park and a twenty-acre parade ground. About the worst case reported is that of Pittsburgh, a city of 156,000 inhabitants and possessed of less than one and one-third public acres—a contrast to Buffalo (population, 155,000) which reported, in addition to the Park, fifty-six acres in the Parade, thirty-two acres in the Front and forty-two acres in eight pieces. Compare also the following:

Troy, New York (57,000), one acre. Richmond (64,000), sixty-five acres in five pieces.

Kansas City (56,000), two acres. Akron, Ohio (16,500), twenty-five acres in seven pieces.

Auburn, New York (22,000), one acre. Salt Lake (21,000), forty acres in four pieces.

And the remarkable case of Lawrence, Kansas (8,500), seventy-three acres in five pieces.

We have no fixed rule for the proper ratio to population of

the acreage or number of public squares, but it is safe to say that while a few of our cities are well provided for, a majority are still very badly off. New York is now tearing down buildings to make room for public gardens. Philadelphia, also, is endeavoring to make up for her past carelessness. Smaller places should secure the necessary lands before the cost becomes intolerable. A word in conclusion as to the laying out of public squares and gardens. The problem is wholly distinct from that of the country-park. Here and there, to be sure, is found a small public ground of such strongly marked shape and character that it by right rules its surroundings, whatever they may be—as the Back Bay Fens in Boston call a halt to the city structures—but small grounds in general are necessarily dominated by the formal lines of the streets and buildings which enclose them, and they must generally be shaped to a correspondingly formal plan. Every hope of a good general effect hangs on the securing of a good general plan. The famous Public Garden of Boston, recently criticised in this paper, fails of fine general effect because its frame-work or ground-plan was never thought out as a whole—as a design. The handsome and costly gardening which is to be seen there, the gorgeous beds and the fine specimen plants, cannot be fittingly displayed—can only be promiscuously scattered as they are—so long as the ground-plan of the garden remains the mongrel thing it is.

Boston. *Charles Eliot.*

New or Little Known Plants.

Phlox nana.*

THIS species presents one of the comparatively rare instances of great diversity of color in the wild state of an otherwise well defined species. From the readiness with which, in very many cases, color-breaks are induced in cultivated plants, it is very evident that color alone is of no value for distinguishing species. But in the ordinary course of nature, such variations are the exception, and species are in general, considering their capacity for change, wonderfully constant to their colors.

The *Phlox Drummondii*, in its native state, is said to be "red, varying to rose, purple and white," while under cultivation the range of tints has been greatly extended. *P. nana* shows not only various shades from red to white, but is remarkable in being sometimes of a pure bright yellow, a color not before known in the genus, though occurring in *Gilia* and *Polemonium*. In cultivation, therefore, there would seem to be here the possibility of obtaining rare combinations of colors, in what is in other respects, also, a very pretty species.

The plant is a rather low perennial, loosely branching from a somewhat woody base. It is a native of our dry south-western territories, from western Texas to southern Colorado and westward, and both purple and yellow forms were collected last year by Mr. C. G. Pringle in the mountains of Chihuahua.

S. W.

Orchid Notes.

Cattleya Exoniensis.—This superb hybrid was raised many years ago at the Exeter Nurseries, England, and was named after the city where it originated. The parents are presumed to be *Lalia crispa* and *L. purpurata*, as the habit and

*PHLOX NANA, Nutt.; Gray's Synoptical Flora, ii. 134.



Fig. 66.—*Phlox nana*.

inflorescence of the plants present an intermediate character between these two species. The flowers are about six inches across, and vary in color from almost white to a delicate rose. The sepals are narrow, while the petals are broad, with wavy edges and somewhat twisted at point. The lip, somewhat long, narrow, and much crisped, is white, with the middle lobe of the richest purple. The throat is yellow, streaked with purple.

This very fine plant is generally acknowledged to be one of the best of the genus, the exquisite lip being excelled only by *C. callistoglossa*, a hybrid also of *L. purpurata*. *C. Exoniensis* has always been in great demand, and it commands very high prices, but it will never become at all common unless new plants are raised from seed. Much care is required to keep this species in good health for any length of time, and when the plants attain any great size, they seem to become exhausted, and require to be broken up into small pieces and started again in small pots. The usual Cattleya treatment will suit it, but it should be in the coolest part of the house.

Phalenopsis Lowii.—This is a very distinct type of *Phalenopsis*. It is found growing on bare rocks in Moulmein, exposed to the full sun and subjected to extreme rains in the growing season, and so dry at other times as to cause it to lose its leaves. But in cultivation the plants never attain the strength and vigor to withstand such treatment, therefore every effort should be made to retain the leaves through the winter. This species grows very freely, producing abundance of roots. These seldom adhere to the block or basket, but spread in all directions, being often erect, consequently scarcely any potting material is required. It should have abundance of water at all times and the warmest and lightest part of the house. The flower spike is about one foot long, purplish, and bears five to ten round, light-rose flowers, one and a half inches across. The lip is narrow, of a deep rich purple. The column is very peculiar in shape, being bent downwards and prolonged into a proboscis-like appendage. *Phalenopsis amethystina* is also in flower. This plant is seldom seen, but the flowers are very pretty, and also interesting as being the smallest of the whole genus. It grows freely on blocks or in baskets with sphagnum moss.

Mesospinidium vulcanicum.—This attractive Orchid is now properly placed among the Odontoglossums. It is well worthy of cultivation, bearing slender, erect racemes of bright, rosy flowers, twenty to thirty in number, and about two inches across. The ovate, compressed bulbs have two stout, erect leaves, about six inches long. This plant is often seen in poor condition. Coming from the cool regions of Peru, it requires the same treatment as the Odontoglossums, especially as regards water, which should be given in abundance.

Keenwood, N. Y.

F. Goldring.

Lælia elegans.—Some of the choicest and most beautiful varieties of this fine *Lælia* are now forming a very attractive group in the collection of Mr. F. L. Ames, of North Easton, Massachusetts. The plants are in a high state of cultivation. The most striking of them is a well-flowered example of the extremely rare and showy *Lælia elegans prasiata*, having produced, from three stout growths, twenty-one handsome blossoms of great substance, size and color, and one of the finest forms we have seen. One spike was very remarkable, having borne as many as nine fully expanded flowers of considerable dimensions, the two others bearing six flowers on each. In color this variety is quite distinct from the ordinary type, having dull magenta-rose colored sepals and petals, with a broad, flat lip of a deep magenta-purple, which is very striking. It also emits a very powerful fragrance. Another very scarce variety is specially noticeable, named *L. elegans Turneri*, which is represented by a splendid, well-flowered specimen. This variety proves itself to be an excellent companion to the former, developing its blossoms at the same season of the year. One of the handsomest of all has just passed flowering, called *Lælia euphatha*. This is supposed to be a natural hybrid between *L. elegans* and *L. purpurata*. It differs somewhat in shape of flower, the color of its sepals and petals being of a fine rose, while the lip is a rich velvety purple. All the above varieties should receive the same treatment as *Lælia elegans*, with ample light and air while making their new growths. For years to come this *Lælia* will be one of the rarest of the genus, as it is rapidly becoming extinct in its native country, only very small plants being procurable, and that only after diligent search.

Jersey City.

A. D.

Plant Notes.

Syringa pubescens.

OUR illustration upon page 415 of this issue represents a flowering branch of this very distinct and beautiful north China Lilac, which has now flowered for two years in the Arnold Arboretum, having been raised there from seed, for which that establishment is indebted to Dr. Bretschneider. *Syringa pubescens* is one

of the most distinct and most floriferous of all the Lilacs, being literally covered here, early in June, with its short panicles of small, long-tubed flowers, which are pale rose-colored and most deliciously fragrant. As seen in cultivation, it is a compact shrub, three to five feet high, with upright, slender branches, and rather small, ovate leaves, cuneate at the base, one and a half to two inches long, bright green on the upper, pale on the lower surface, the midrib covered with pubescence. *S. pubescens* is a native of northern China; it is perfectly hardy, and one of the most attractive and beautiful of new introductions to our shrubberies.

C. S. S.

Some Useful Plants of Southern California.

Romneya Coulteri.—Few will ask why this magnificent flower was made after once seeing it in full bloom—for the delight of their eyes will satisfy them. The *Romneya* Poppy is one of the most regal of our native flowers, and no flower yet introduced in our gardens excels it. Growing along the water courses on our southern border, southward to near San Quintin Bay, in Lower California, it wastes its sweetness and pure white loveliness unseen and unknown, except by a few. The wax-like flowers often exceed six inches across, the white petals set off to advantage by a centre of golden stamens. The stems grow from four to fifteen feet in height, rising above the surrounding brush, and when seen covering large areas and in full bloom the plant is not readily forgotten. Not content to occupy the fertile valleys, it seeks the most secluded cañons as well and often dots the hillsides, climbing far up the mountain-sides away from the reach of any but the most enthusiastic botanists. It seems to delight in these high, sterile locations, where it is thoroughly protected from the winds and is not likely to be disturbed. In cultivation the flowers become much larger and more wax-like, and it has long been in demand in Europe, where it was very early introduced. In addition to its horticultural attractions it possesses strong qualities of great medicinal value, which may secure for it a place in the materia medica when they are more fully investigated. It has long occupied a place among the medicinal herbs of the Indians of Lower California.

Simmondsia Californica.—This is a very common shrub in the southern part of the State, extending southward in the peninsula of Lower California. It was found by Dr. Veatch on Cerros Island, and was figured from that locality in one of the bulletins of the California Academy of Sciences. It forms low, oval bushes along the sea coast, often less than a foot in height when exposed to the ocean winds, and with its stiff leaves and branches and dense foliage forms impenetrable thickets in less exposed situations. The foliage is of a glaucous hue, blending harmoniously with the reddish soil on our hills and mesas, and in sharp contrast with the dark, olive-green foliage of the common *Rhus*, with which it is often associated. It rarely attains a height of fifteen feet, with a trunk diameter of four or five inches. Sometimes one standing alone forms a very symmetrically shaped tree, but it usually forms an oval mass with its dense foliage. The *Simmondsia*, as an ornamental shrub, is likely to meet with popular favor. Growing in fertile valleys and on barren hills, along exposed sea-cliffs and on the brink of the great Colorado desert, and equally tenacious of life whether in a situation of perpetual summer or where exposed to the snows of winter, it may be presumed that it will prove both hardy and easy of cultivation. The *Simmondsia* is a prolific bearer of an edible nut resembling an acorn both in size and shape. The resemblance is still further increased by the persistent calyx which forms a cup for the fruit. When ripe the outer envelope splits open and liberates the nut or nuts enclosed. They have a pleasant flavor, and I have frequently enjoyed eating them without any injurious effects. I am not aware that they were eaten by the Indians, but probably they formed an important article of food with them.

Prunus ilicifolia.—The Oak-leaf Cherry is one of the characteristic shrubs of San Diego County, and might, with nearly equal appropriateness, be termed the Holly-leaved Cherry, as the foliage is somewhat between that of our Shrub Oaks and the Holly. It is not rare both near the sea-coast and on the higher mountains bordering the sterile Colorado Basin, and some seasons it proves to be a very prolific bearer. Near the coast I think it is oftener barren than in the interior, but it grows rather more luxuriantly in some of the sheltered and fertile cañons near the ocean. As an ornamental shrub it is highly appreciated, especially for hedges, and is extensively planted for that purpose near Los Angeles, I am informed.

The glossy, dark evergreen foliage is always pleasing, and its dense, prickly character is an excellent feature. The fruit is of a dull, rather deep red when mature, oval in shape, often rather blunt at the ends, and an inch in length. A bush loaded with the fruit is a tempting sight, but it is rather aggravating to find the pulp scarcely an eighth of an inch thick. The stone forms the larger part of the fruit; but it is

Stuartia pentagyna, one of the most beautiful, when in flower, of North American shrubs, is described, in works upon American botany, as a native of the mountains of Georgia and the Carolinas. It is nowhere very common in these states, being confined principally to the banks of streams running eastward from the Blue Ridge. Now it appears that its real home is on the western foot-hills of the Big Smoky



Fig. 67.—*Syringa pubescens*.—See page 414.

still worthy of notice, and finds its champions among our country people, who calmly state that they prefer it to the grape. A basketful may be quickly gathered at the proper time if the season has been favorable, and possibly were not other fruits so abundant it might become of use for the table. I think I have seen it stated that the experiment of grafting cultivated Cherries on to this species has proved a success. If true, it certainly is of great value for cultivation, where it would be difficult to make other trees or shrubs grow successfully. Had we an agricultural experiment station in this section of the state it would be a proper subject to investigate.

San Diego, Cal.

C. R. Orcutt.

Mountains of Tennessee. Here this shrub literally lines the banks of all the small streams tributary to Pigeon River (which must not be confounded with the Big Pigeon, a more important stream further north), almost to the exclusion of other plants, forming dense thickets, sometimes fifteen feet or more high.

Aralia spinosa, the so-called Hercules Club or Angelica Tree, must be seen, too, on the western slopes of the Big Smokies, if its true beauty and character are to be understood. It is very common between three and four thousand feet elevation, growing in the richest soil in the neighborhood of streams and springing up frequently along the fences of

mountain farms. It attains a height of thirty or thirty-five feet, with a trunk sometimes eight inches in diameter, wide-spreading branches and a true arborescent habit. One of these large specimens, crowned with its enormous panicles of black fruit, is an object of remarkable beauty. The flowers are deliciously fragrant, recalling those of the common Lilac, and are highly valued by the mountaineers for their honey-yielding qualities.

The Seedless Barberry (*Berberis vulgaris asperma*) I never saw in such perfection of fruit as I saw it to-day in a Hampshire garden. It was one of the most beautiful sights I ever enjoyed in an autumn garden. There was a dense bush, eight feet high and as many in diameter, and every branch was loaded with hanging clusters of long berries of the most brilliant scarlet, which, with the foliage yet green, made a striking contrast. This seedless Barberry, though nothing more than a form of the common Barberry, is very superior in berry to any other. These are without seeds, very succulent, and make a better preserve or jelly than the other sorts. But as an ornamental shrub of the highest merit I would direct attention to it, for I can imagine nothing more beautiful on a lawn on a gray October day than such a bush of it as I saw to-day. It is an old variety known in the days of Philip Miller, who named it, and also by DuHamel, who, according to Loudon, spoke of the merits of the fruit for preserving. It is from this fruit that the celebrated *Confitures d'Epine vinette* are made at Rouen. It is not common in English gardens, and seldom seen in nurseries.

The Missouri Currant (*Ribes Missouriensis*) is at this season more conspicuous than at any other, for now its foliage, on the point of falling, is dyed with the most brilliant hues of crimson, blood-red and yellow. *R. aureum* also colors well, but is not so striking as the other, which is now grown largely at Knap Hill by Mr. Waterer expressly for planting for autumn effect.

London, October 3d.

W. G.

Cultural Department.

Manure.

JUST as soon as crops are cleared off the ground we should cart or wheel out the manure on to it. When only a part of the ground can be cleared at one time, we can draw out the manure on to that part, and at the same time leave a heap of manure where it will be handiest for the yet uncleared part. So far as kitchen garden crops are concerned it matters little what sort of farm-yard manure is used, but for the cabbage tribe truck-gardeners have a prejudice against hog-pen manure, as they think club-root is more prevalent in land so manured than when cow or horse manure is used. Cow manure is preferred for light land and horse manure for heavy land. On light soil, hen or pigeon manure should be used very thinly, and always composted with earth or other absorbents, and rather in spring after growth commences than in fall. We use a large quantity of New York City stable-manure and find it excellent. As manure accumulates during the summer months we pile it up into solid heaps of any convenient length and breadth, but not over four or five feet deep, and drive the carts or wagons over the heap to compress the manure and save it from burning. Five feet may seem very deep, but as the manure rots it shrinks, so that what is five feet in May will probably be nearer three feet in October. The burning dries and deteriorates the manure, hence the advantage of shallow piles which catch and hold the rain. The manure-piles should be covered in summer with loam, when it can be conveniently procured. The horse-stable manure that accumulates during the summer we treat differently, having an eye to mushroom beds in winter and hot-beds in spring. The main object is to keep it dry, to prevent heating and rotting. We clear it away every day from the stables, therefore, and heap it into a high conical pile, which will shed the rain, so that the manure will turn over in fall almost as dry as straw in the barn. In fall we shake out the droppings, wet them, and treat them for mushroom beds. They will heat violently and make good material for that purpose, though not as good as manure that has accumulated in a stable-cellar or has been kept under the horses' feet in box-stalls for several days, so as to be well soaked with urine. Now this strawy litter that had once been wetted in the stable, then dried and kept dry in the pile, will, if wetted, piled and turned, make capital heating material for hot-beds; indeed, if we did not save the summer manure in this way we should be very short of hot-bed manure in spring. True, tree leaves, if gathered in fall, stored dry and kept dry over winter,

then wetted and heated in spring, are useful for hot-beds after the middle of March, though they have not strength enough for earlier beds.

Before carting out the manure on the land, we always turn it over and break it up fine, so that it shall spread well and be easily dug or plowed into the ground.

It is also well now to prepare manure and compost for mulching lawns and trees. Pretty well rotted farm-yard manure turned over loosely and broken up fine is capital top-dressing material for ordinary purposes, but in the case of impoverished lawns compost is better than plain manure, and should be applied in double or treble the quantity that we should use of manure. This compost consists of good loam and well-rotted, broken up manure in equal parts, or a little more of the loam than of the manure. Prepare a heap of this now by throwing the loam and manure on the pile together, then before it is used, say in November or December, turn it over to thoroughly mix and break it up. Some people have a strong repugnance to the use of manure or compost as top-dressing for lawns, claiming for it unsightliness and a bad smell, and they urge the use of commercial fertilizers instead. Now, no one would think of using fresh hog-pen or other malodorous manures as top-dressing. In the case of well prepared manure or compost a bad smell is barely perceptible, and after the first snow or rain there is no smell. The other objection on the ground of unsightliness is amply outweighed by the benefit of the top-dressing to the lawn. The dressing not only acts as a fertilizer, but also as a protection in winter, a consideration of the utmost importance in the case of short-cropped lawns, subject to freezing and thawing. We have many acres of lawn, the surface soil of which is little other than well-manured sand with a somewhat loamy skin which has been formed by repeated top-dressings of compost, and the subsoil is sand. This lawn keeps a sod of grass that could not be retained by means of artificial manures. On a lot of eight acres, also of very sandy soil, which was formerly top-dressed with manure every year and cut for hay, there has always been a fair first crop, and in the event of a moist summer, a good second crop. For two years we have pastured this lot, and the crop of grass—Red Top, mostly—it bears is extraordinary. Proper artificial manures are excellent in their way, especially in giving a brisk start to grass on loamy land, but for light or sandy land barn-yard manure seems to be preferable.

Glen Cove, N. Y.

Wm. Falconer.

Roses.

THE hybrid Tea Rose, W. F. Bennett, seems to be coming into favor in some localities this season, though many growers, after giving it one season's trial when it was first introduced, were ready to discard it. But it is probable that its peculiarities were not thoroughly understood, and that the general failure with it during its first season was due to that fact.

The present opinion seems to be that this variety requires a special treatment, and that when properly handled it will pay for the trouble. When in good condition it certainly is a beautiful Rose, both in form of bud and in color.

It has been found that two-year-old plants almost invariably produce better flowers and have stronger and more rapid growth than yearlings, and in view of this fact a different system has been practiced with the Bennett, in several instances, from the usual mode of forcing Roses, and with better results. As is well known, in many of the large Rose establishments, all, or nearly all, the houses, are replanted each year. The Bennett should be treated on the same plan, with this marked difference, that with the majority of varieties young stock struck during the preceding winter should be planted; but with the Bennett the old plants may be lifted out of the beds or benches in which they have been growing for one season, and potted up into four-inch, five-inch or six-inch pots, as the size of the plants may require. This lifting operation should take place about March, and the plants grown afterward in the same manner as young stock, until the usual planting season arrives, when they should be replanted in fresh soil in the beds. With reasonable attention, they will make better growth and produce correspondingly better flowers than they did during the first season.

It may not be advisable to repeat this treatment with the same plants after the second year, as the plants may be too much exhausted after having been forced for two successive seasons to respond to a third trial. Of course it may be said that there is nothing new in this operation, and that it has been long practiced by a certain class of florists.

Still it may be a desirable piece of information for some one, when applied to the culture of the Bennett, and as such it is now offered. There has also been some difference of opinion as to the best temperature in which to grow the Bennett, and it may be stated that, in the experience of the writer, the best flowers have always been found at the coolest end of the house, where the temperature would not average more than 50° during cold nights. *H.*

Philadelphia.

The Forest.

New Forest Law for Italy.

IN Italy, on the 1st of May, 1888, a new forest law went into effect, in which full recognition of the established truths regarding forest influences, and the highest statesmanship, are both discernible. Although this new law is not as thorough-going as some of its advocates had desired, it is based on sound and liberal principles, recognizing individual rights, but recognizing, too, the right and duty of the State to prevent any exercise of individual freedom which injures the community at large.

The Government forests in Italy (116,000 acres, according to latest returns) comprise only 1.6 per cent. of the total forest area; the balance of over 7,000,000 acres belongs to communities, corporations and private owners. The forest law of 1877, recognizing the need of government protection to the agricultural interests, which were being injured by forest devastation and denudation of mountain-sides, had placed nearly one-half of this area under "forest bounds," or Government supervision, namely, "all woods and lands cleared of wood on the summits or slopes of mountains above the upper limit of Chestnut growth, and also those that from their character and situation may, in consequence of being cleared or tilled, give rise to landslips, caving in, avalanches, snowslides, and may, to the public injury, interfere with water-courses or change the character of the soil, or injure the local hygienic conditions."

In the latter case (hygienic considerations) it was optional with the communities to apply for Government interference, the communal or provincial forestal council having to determine whether the application should prevail, and the community being bound to indemnify the proprietor for any material damage that might result to him from having his property placed under "forest bounds."

Where reforestation was considered necessary, it was to be done at the joint expense of the Government, the provinces and the communities, and the right to seize, for reasons of public utility, in order to replant, was given to the forestal committee or council in each province, if the proprietor refused to do the work himself.

Under this law there were created forestal committees in thirteen provinces, with a yearly fund of \$4,000—one-half contributed by the general Government, the other half by the province—while the Forest Department tried to promote reforestation by giving premiums, distributing plant material and furnishing gratis advice through its foresters; the Government besides obligated itself to contribute two-thirds of the cost of reforestation to the reforestation associations, the formation of which was encouraged by the law.

Of the 76,000 acres, which were found to require reforestation for reasons of public safety, there were reforested during twenty years, from 1867 to 1886, under this and previous laws, 22,000 acres, the Government contributing \$85,000; the provinces and communities, \$95,000; private owners, \$35,000; the Government had, in addition, furnished 8,000,000 plants and 260,000 pounds of seed, free of charge. This was, indeed, slow progress, due to the absence of properly constituted authority to advance the work.

The devastating floods of the year 1882 produced a favorable feeling for more energetic measures, and the present law has been the result; a law evidently drawn with care and worth studying by our forestry reformers in devising measures soon to be needed here. It may certainly be considered the best law now existing in any country, for securing the benefits resulting to the community at large from a continuous forest cover of mountainous districts, liberal in spirit to individual owners, and yet placing the rights and welfare of the many above the willful and regardless exercise of private property rights.

The essential feature of the law, comprising twenty-one articles, may be briefly summed up as follows:

Article 1 declares the reforestation and *re-sodding of moun-

*The Commission which investigated the working of the French reforestation laws for the purpose of framing this law intelligently shows the value of re-sodding for purposes of binding the soil and regulating waterflow to be illusory. The decision whether reforestation or re-sodding is to be resorted to, is left to the Forest Administration.

tains and dunes as a means to restore their usefulness and to regulate mountain streams, a public and urgent necessity, to be undertaken under the charge of the Department of Agriculture. A list of the territory to be reforested, with estimates of the cost, is to be prepared by the Department, in co-operation with the Department of Public Works, and to be submitted to the owners of the land, who may make their objections to the proposed Government supervision, through the forestal committee of the province. If the Department, with the advice of the forest counselor and the counselor of public works, decides for Government supervision, the land falls under the regulation of the forest protective law of 1877, and their reforestation and management, under Government supervision, becomes obligatory. (Articles 2, 3, 4.)

The owners are permitted to associate themselves in order to undertake the work of reforestation co-operatively, and if the owners of three-fifths of the reforestation district, with a taxable value of at least one-half the total tax value, declare for association, it is legally so constituted. Yet association is not obligatory to the owners who wish to keep out of the association. They must, however, share in the general work and expenses, by which they may be benefited, or else they can be expropriated with suitable compensation by either the Government or the Association. This right exists also if they do not comply on their own property with the general plans of work. The owners in association contribute according to the tax value of their property and so do those outside the association for the general work—road making, binding of torrents, etc. Such associations are to have the same rights as associations for irrigating purposes and may borrow money at the low interest at which the soil-credit institutions of the State are loaning. (Articles 5 to 10.)

The Forest Department is to contribute to the extent of three-fifths of the total expense of the work of reforestation to associations and private owners, upon the condition that the plans for the work prepared by the Department be followed and the work be done in the specified time. Where the owners do not consent, or fail to do the work, the Department has the right to expropriate under the common law and perform the work alone. (Articles 11 to 16.)

The tracts thus acquired by the Government may be sold again before or after the work of reforestation is perfected, and the owners may reclaim their property within five years after reforestation, by paying the price paid them, together with the cost of work and interest on the same (Arts. 16 and 17).

The plans and regulations for the reforestation and management of the reforested grounds are prepared by the Forestry Department, to whom, yearly, a special fund will be appropriated for this work upon the basis of its report. (Articles 18 and 20.)

Article 19 allows the Department to restrict and regulate pasturage for the purpose of securing the soil and young growth in all mountainous districts, where such regulation seems called for, but it must pay a compensation to such owners as they are periodically prevented from grazing their cattle, and for any other damage in the use of their property they may eventually suffer.

It appears, then, that while the necessity for energetic measures is fully recognized, the law is careful to respect, as much as possible, individual rights. Free-will is allowed to determine the associated efforts, the Government simply determines the method and manner of work which it subsidizes, and undertakes the work itself only when private interest opposes itself to the common necessity. In Italy, as with us, the national idea is against the State owning property, and therefore the provision for selling the reforested area or returning it conditionally to the former owner, while under the French law, under similar circumstances, only a part of the expropriated property can be reclaimed from the government.

The proposition to release, as in France and Switzerland, the reforested land from taxes for thirty years was, after a lively debate, voted down, and the contribution to the work of three-fifths of the cost was substituted; the more reasonable motion, that the owners of land in the valley, who are decidedly benefited by the work on the mountains, should contribute towards it, was also lost.

The Department has already prepared the surveys and working plans for forty provinces, which contain an area to be reforested of 261,074 acres, at an estimated cost of \$4,640,000, while the remaining twenty-nine provinces will increase the area, it is estimated, to 534,728 acres, and the cost to a round \$12,000,000.

Thus Italy finds it necessary to tax herself in order to avert losses and dangers which the improvident clearing of moun-

tain slopes has brought upon her, while we, unable to learn from these experiences, allow the timbered lands of our public domain situated on the western mountain-ranges to be destroyed or sacrificed without adequate returns, and with the assured effect of injuring the agricultural lands below, which depend upon irrigation, and therefore upon the hydrologic influences of the forest-cover on the mountains. The failure to provide the appropriation of a few thousand dollars for an effective forest protective service now, will most certainly necessitate the expenditure of as many millions for reforestation in a not far distant future.

B. F. Fernow.

Washington, D. C.

Correspondence.

Foreign Plants and American Scenery.

To the Editor of GARDEN AND FOREST :

Sir.—In GARDEN AND FOREST of August 1st, page 266, the law seems to me to have been laid down that the introduction of foreign plants in our scenery is destructive of landscape repose and harmony. No exception was suggested, and the word harmony was used, if I am not mistaken, as it commonly is in criticism of landscape painting, not of matters of scientific interest; not as if the question were one of what, in matters of literary criticism, is called "the unities."

That a fashion of planting far-fetched trees with little discrimination has led to deplorable results, no good observer can doubt. That these results are of such a character that we should, from horror of them, be led, as a rule, in our landscape planting, to taboo all trees coming from over sea, many of your readers will not, I am sure, be ready to admit, and if no one else has yet offered to say why, I will ask you to let me assume that duty.

Suppose anywhere in our Northern Atlantic States an abandoned clearing, such as in Virginia is called an "old-field;"—suppose it to be bordered by the aboriginal forest, with such brushwood as is natural to its glades and skirts straggling out upon the open;—suppose that mixing with this there is a more recent, yet well advanced, growth of trees and bushes sprung from seed, of which a part has drifted from the forest, a part from a neighboring abandoned homestead, while a part has been brought by birds from distant gardens, so that along with the natives, there is a remarkable variety of trees and bushes of foreign ancestry;—suppose a road through more open parts of the old-field, and that on this road a man is passing who, having lately come from New Zealand (or the moon), knows nothing of the vegetation of Europe, Asia or North America, yet has a good eye and susceptibility to the influences of scenery.

Now suppose, lastly, that this man is asked to point out, one after another, so that a list can be made, trees and bushes in an order that will represent the degree in which they appear to him to have an aspect of distinctiveness; No. 1 being that which stands out from among the others as the most of all incongruous, unblending, unassimilating, inharmonious and apparently exotic; No. 2 the next so, and so on.

The question, as we understand it, is essentially this: Would all of the trees and bushes that had come of a foreign ancestry be noted before any of the old native stock?

Some of them surely would stand high on the list, and some of much popularity, such as Horse Chestnut and Ginkgo and numerous sports of trees in themselves, at least, less objectionable on this score, as, for example, Weeping Beech and most of the more pronounced weepers; most of the Japanese Maples, also, and the dwarf, motley-hued and monstrous sorts of Conifers.

But, all? or, as a rule, with unimportant exceptions? So far from it, to our eyes, that we doubt whether, even of different species of the same genus, the visitor would not point out some of the native before some of the foreign—some of the American Magnolias, for example, before any of the Asiatic. We doubt if the European Red Bud, the Oriental Plane or the Chinese Wistaria (out of bloom) would be selected before their American cousins. It appears to us that *Rubus odoratus* would be noticed before *Rubus fruticosus*. Passing from the nearer relatives, it seems to us likely, also, that many of the European and Asiatic Maples, Elms, Ashes, Limes and Beeches would be named *after* such common American forest trees as the Catalpas, Sassafras, Liquidambar, Tulip, Tupelo and Honey Locust; that the American Chionanthus, Angelica, Cercis, Ptelia, Sumachs, Flowering Dogwood, Pipe-vine and Rhododendrons would be placed before some of the foreign Barberries, Privets, Spireas, Loniceras, Forsythias, Diervillas or even Lilacs. We doubt if the stranger,

seeing some of these latter bushes forming groups spontaneously with the natives, would suspect them to be of foreign origin, or that they would appear to him any more strange and discordant notes in the landscape than such common and generally distributed natives as have been named. We doubt if Barberry, Privet, Sweetbriar and Cherokee Rose, which, in parts of our country, are among the commonest wild shrubs, or the Fall Dandelion, Buttercups, Mints, Hemp Nettle and a dozen others, which, in parts, are among the commonest wild herbaceous plants, though it is believed all of foreign descent, would ever be thought, by such an observer, out of place in our scenery because of their disreputable and inharmonious influence. Two hundred years hence are not Japanese Honeysuckle, "Japanese Ivy" and "Japanese Box" (*Euonymus radicans*) likely to be equally bone of our bone in scenery?

The forest scenery of northern Europe is distinguished from most of ours by greater landscape sedateness. It is to be doubted if many of the trees that come thence to us, judiciously introduced among our own, provided they are suited with our climate, will not often have more of a quieting than of a disturbing influence on our scenery.

We have much ground which it is difficult and costly, with any plants natural to it, to redeem from a dull, dreary, forlorn and tamely rude condition. There are parts of the world where, in ground otherwise of similar aspect, plants spread naturally, of such a character and in such a manner, that the scenery is made by them interesting, pleasing and stimulating to the imagination—picturesque, in short. Heather, Broom and Furze are such plants in the British Islands. It happens that neither of these has yet flourished long with us, though it is said that Broom appears to have got a foothold in some of our exhausted tobacco lands. But if we cannot have these, it does not follow that nowhere in the world are there plants that would serve the same purpose with us. If any such offer, should not every American give them welcome? The Woad-waxen is a plant inferior to those above named as an element of landscape, but superior in cosmopolitan toughness. As a matter simply of scenery is such heroic settlement as it has effected (it is often winter-killed to the ground, but not to the root), upon the bleak, barren fells back of Salem, as lately described in GARDEN AND FOREST, a misfortune? We believe that to most persons it adds (and otherwise than through its floral beauty) much to the landscape charm of these hills, while detracting nothing from their wildly natural character.

Again, may we not (as artists) think that there are places with us in which a landscape composition might be given a touch of grace, delicacy and fineness by the blending into a body of low, native tree foliage that of the Tamarisk or the Oleaster, that would not be supplied in a given situation by any of our native trees?

Is there a plant that more provokes poetic sentiment than the Ivy? Is there any country in which Ivy grows with happier effect or more thriftily than it does in company with the native Madrona, Yew and Douglas Spruce on our north-west coast? Yet it must have been introduced there not long since from the opposite side of the world. Would not the man be a public benefactor who would bring us from anywhere an evergreen vine of at all corresponding influence in landscape that would equally adapt itself to the climatic conditions of our north-eastern coast?

Imagining possibilities in this direction, let us suppose that, from remote wilds of Central Asia or Africa, we should be offered an herb, or a close-growing, dwarf, woody plant like the *Leio-phyllum*, as it occurs in the Carolina Mountains, that would form a sod with a leafage never rising more than three inches from the roots and never failing in greenness or elasticity during our August droughts. Would not the matting of many a large, quiet, open space among our trees, with such a plant, favor harmony of scenery much more than it is ever favored by the result of the best gardening skill, aided by special fertilizers, lawn mowers, rollers and automatic sprinklers, in dealing with any of our native grasses? Such an acquisition we may think too improbable to be considered. But is it really much more improbable than, 200 years ago, would have been a prediction of the present distribution in some parts of our country of Timothy Grass, Red Clover and Canada Thistle, or in other parts of Bermuda Grass, Alfalfa and Japan Clover?

Before agreeing that no addition can be made to our native forest, except to its injury, we should consider that trees for landscape improvement are not solely those that please simply from their fitness to merely fall quietly into harmony with such as are already established. Trees would be of no less

value to us that, being adapted to our climate, would supply elements of vivacity, emphasis, accent, to points of our scenery, such as we see happily produced by the Upright Cypress and the horizontally branching Stone Pine when growing out of Ilex groves on the Mediterranean. And this is a reminder that some scholar has said that we can form little idea of what the scenery of Italy was in the time of Virgil from what we see there now. This because so many trees and plants, which were then common, have since become rare, and because so many, then unknown, have since become common. Is there reason for believing that the primitive scenery of Italy was, on this account, more pleasing than the present?

The large majority of foreign trees that have been introduced with us during the last fifty years, and which have promised well for a time, have been found unable to permanently endure the alternate extremes of our climate, but that there are many perfectly suited with it we have abundant evidence. Does the White Willow flourish better or grow older or larger in any of the meadows of its native land than in ours? Was it not under this tree that the most American of our poets sung of the family of trees, "Surely there are times when they consent to own me of their kin, and condescend to me and call me cousin," forgetting that, if so, it was the case of "a certain condescension of foreigners"? How is it with the English Elm, the Norway Maple, the Horse Chestnut? The Ailanthus, the Paulownia, the Pride of China, all introduced from Asia within the memory of living men, are spreading as wild trees and elbowing places for themselves in the midst of our native forests. The Eucalypti, from Australia, have come, in thirty years, to be a marked (not generally an agreeable) feature in the scenery of California, and while the climate of our Atlantic coast does not quite agree with the Hawthorns, in Oregon, notwithstanding its greatly drier summer, they seem to be as much at home as in Kent or Surrey.

But on this point of the adaptability of many foreign trees to flourish in American climates, only think of Peaches, Pears and Apples.

Frederick Law Olmsted.

Brookline, September, 1888.

[Mr. Olmsted's letter should be read with the greatest care and attention. No man now living has created so much and such admirable landscape, and no man is better equipped to discuss all that relates to his art. The position which GARDEN and FOREST has taken upon the question of composition in plantations made with the view of landscape effect is embraced in the following sentence, extracted from the article to which Mr. Olmsted refers: "It is certain, at any rate, that combinations of plants, other than those which nature makes or adopts, inevitably possess inharmonious elements which no amount of familiarity can ever quite reconcile to the educated eye." This sentence was written with special reference to the fact that in Prospect Park, in Brooklyn, various showy flowered garden-shrubs of foreign origin had been massed among native shrubs growing apparently spontaneously along the borders of a natural wood in the most sylvan part of the park. The effect which this combination produced appeared to us inharmonious, and therefore less pleasing than if the plantation had been confined to such shrubs as may be found growing naturally on Long Island in similar situations. How far the idea of harmony in composition in landscape is dependent upon association it is hard to say. Mr. Olmsted acknowledges that trees like the Ginkgo, the Horse Chestnut and the Weeping Beech would look out of place in an American landscape—that is, trees which have no prototypes in our natural, native scenery. But would the inhabitant of New Zealand or of the moon, whom we suppose to be totally ignorant of the vegetation of the north temperate portions of the earth's surface, find anything to jar upon his feelings in seeing a Weeping Willow or a Ginkgo or a Horse Chestnut growing with and among Hickories, Tupelos or Sequoias, which may be taken as the three peculiarly North American trees? Probably he would find the combination an appropriate and pleasing one, and no feeling of inharmoniousness would ever cross his mind. Foreign trees with American prototypes, like the Beech, Linn, Red-Bud, Plane, from which they can hardly be distinguished except by a botanist, do not jar upon the

sense of fitness when used in landscape planting here, because for all intents and purposes they are the same as our own species, except that, as a rule, they never grow here as vigorously; and, therefore, are less attractive objects. The European Oak, if it would grow here, might replace the American White Oak, which it closely resembles, anywhere, and this is true of almost every European tree which has an eastern American representative. We certainly did not intend to convey the idea that all American trees could be associated together harmoniously. One of the broad-leaved Magnolias of the southern Alleghany Mountains would appear as much out of place, from our point of view, in a northern landscape, as any tree from any foreign land could possibly do. This same Magnolia, however, amid the broad-leaved evergreens and luxuriant growth of the southern forests, seems to form an appropriate and necessary feature of the forest scenery. The fact that the Barberry in New England, the Cherokee Rose, the Pride of China tree, or the Ailanthus in the Southern States, when these plants are naturalized, and have been familiar objects for generations, do not look out of place in the landscape, confirms our idea that fitness comes not from similarity or dissimilarity of form or color or texture, but from mental association. When we have seen certain plants growing together often enough and long enough—that is, when they have been "adopted" by nature, to quote our own words—we become accustomed to the combination. It is only new and startling combinations which shock our mental susceptibilities. There is nothing more startling (and whatever is startling can form no part of a restful landscape) than to come upon an Apple-tree, as one may sometimes do in parts of New Jersey, growing in the midst of a thick Pine woods, and showing that the land had once been tilled. But if Apple-trees grew in our woods, and we had always seen them there, the combination would not seem an unnatural one.

The truth is that great masters of landscape construction can combine material drawn from many climates and many countries into one harmonious whole, but the masters of the art are not many, and the planter who is not sure of his genius can wisely follow nature in her teachings of harmony in composition. Had this reservation been made in the article referred to, our statement that "all attempts to force Nature, so to speak, by bringing in alien elements from remote continents and climates, must inevitably produce inharmonious results," would, perhaps, have been less open to criticism.—Ed.]

Notes.

Among Mr. Carman's hybrids between *Rosa rugosa* and the Hybrid Perpetuals, one has nearly thornless canes, and the foliage is clustered, remarkable in form and very dark.

The Chrysanthemum Show of the New Jersey Floricultural Society will be held in Orange, at the Harrison Street Rink, on Wednesday, Thursday and Friday, November 7th, 8th and 9th.

At a late exhibition in London were displayed flower clusters of *Hydrangea paniculata grandiflora* more than one foot in height and almost as broad, and they were cut from specimens planted in May last.

The New York Chrysanthemum Show will be held on the corner of Broadway and Fourteenth Street, in a large tent, properly heated. The exhibition will probably open on the seventh of November, and continue for a week.

Experiments at the Iowa Agricultural College Station seem to prove that when infested land is plowed up in order to bury the chinch bug, the furrow, to be effective, must be cut six inches deep, and when the land is not too hard, an inch or two deeper is advisable.

The City of Boston has recently acquired from the Commonwealth, through the Board of Harbor and Land Commissioners, about twenty-four acres of ground in the South Boston district, for the benefit of the public. It will be laid out at once, largely with reference to its use as a playground for children, all the central portion, or fifteen acres, being left open for that purpose.

The heavy storm which passed over Washington on the 16th of September did much damage to the green-houses both at the White House and the Botanic Garden. Many trees in the Botanic Garden were likewise injured and three well-known "memorial trees" destroyed. The Garland Elm, planted by the present Attorney-General, was split in two; the Buckeye, which was transplanted a number of years ago from the grounds of the late Vice-President Hendricks, was uprooted; and a Robinia, which commemorated President Garfield, was laid prostrate.

Professor Budd believes that alternating varieties in the Cherry or Plum orchard favors regular fruitage. A variety that might prove to be a very poor bearer when depending on its own pollen supply, may be found regularly fruitful when intermingled with other sorts. In our climate, if the weather during the blossoming period is hot and windy, a variety may mature and waste its pollen before the stigmas are ready to receive it. In such the pollen of adjoining sorts may perform the needed work with the aid of the insects or the breeze.

The current issue of *Insect Life* gives credit to W. W. Meech, of Vineland, N. J., the well-known author on Quinces, for the discovery that the ways of the common beetle (*Allorhina nitida*) are not altogether bad. He found the adult beetles eating the fungus *Ræstilia aurantiaca* upon his Quince trees. They even alighted upon it in the basket when he was gathering the fungus, and ate it greedily. Mr. Meech says "for this meritorious service I desire they should have full credit as among the insects beneficial." This beneficial habit, however, is more than counterbalanced by their appetite for fruit, to say nothing of the damage done by the larva.

A correspondent of the *Springfield Republican* considers the 600 square miles comprised in the Annapolis and Gasperau Valleys of Nova Scotia destined to become one great Apple orchard. One-tenth of this area is now planted with Apple trees, over one-fourth of these being young trees, and from 5,000,000 to 10,000,000 barrels will be annually produced in ten years. Under competition between American and English buyers the Apples sell for from three dollars to five dollars per barrel. About half a million barrels of Gravensteins, Baldwins, King of Tompkins, Nonpareils, Russets, Ribston Pippins and other choice varieties are now produced and exported every year. The fruit is of the best quality, the trees yield from three to seven barrels each, and trees are being planted at the rate of from 100 to 10,000 annually on each Apple farm.

According to the *Country Gentleman*, this season has been a favorable one in many places for heavy crops of Apples and Pears. The trees blossomed abundantly, but the fruit, when about a quarter grown, began to drop, to the great discouragement of owners. This proved, however, the best thing that could have happened, especially to Rhode Island Greenings, and to the Sheldon and Lawrence among Pears. It effected an excellent thinning of the fruit, and what remained developed into such fine specimens as are rarely seen. An expert estimate placed the quantity of Greenings in a portion of one orchard at forty bushels, and there afterwards proved to be more than a hundred bushels. For an estimate of five bushels of Lawrence Pears there were twenty-four. The Sheldons were superb and the Seckels large and fine. This result could be reached any year when an abundant crop is set by artificial thinning, without any diminution of the number of bushels.

The government has decided to abandon and sell the Custom-House and Sub-Treasury, on Wall Street, in this city, because of the insufficient size of the buildings and the great value of their sites. In the recent report of Mr. Fryer, United States Superintendent of Repairs for New York, it is recommended that land for the erection of new buildings should be taken on Battery Park, or, preferably, the Bowling Green. Certain local newspapers have interpreted this to mean that Mr. Fryer would like to see the buildings placed in one or the other of these parks, but we prefer to believe that his recommendation merely refers to sites facing upon them. After all that has been said of the deplorable lack of breathing-spaces in the lower part of New York, and in face of the Mayor's wise advice that they should be at once increased in number, it seems preposterous that any one can seriously think of saving government money at the expense of any of the little parks which now exist. The outrage perpetrated by the national authorities in placing the Post-Office where it stands, has not yet been, and never ought to be, forgiven. And a sister building on the Bowling Green or Battery Park would never, we feel sure, be permitted even by our long-suffering fellow citizens.

It is interesting to learn from English newspapers that General Prejevalsky, a distinguished Russian explorer, is about to try for the third time to reach the capital of the "Dalai Lama" in Thibet. Although this town—Lhasa—is only 300 or 400 miles from the frontier of India, not more than six or seven Europeans have ever set foot in it—and of these not one is alive to-day. The Russian general's first attempt was made through Mongolia and occupied three years. He was then forced to turn back when within twenty days' journey of Lhasa. About three years later, in 1876, he tried for the second time, but was again unsuccessful. Now he will make the attempt by the way of western and south-western Mongolia, and expects to be absent at least two years. The importance of his travels to naturalists is shown by the facts that from his first expedition he brought back five thousand specimens of plants, together with large collections of mammals, fish and insects; and that, taking all the collections together, about one-fifth of his specimens were found to be new to science. The country over which he will travel is extremely difficult and dangerous, and many of the tribes are fanatically hostile to Europeans. If he accomplishes his attempt, his account of Lhasa will excite the greatest interest, and if he returns in safety, even without reaching the capital, important additions to scientific knowledge may be expected.

The largest and finest collection of Orchids ever offered at public sale in this country by a nurseryman or dealer was disposed of by auction at the rooms of Young & Elliott, of this city, on Tuesday of last week. The sale included the entire stock which Messrs. F. Sander & Co., of St. Albans, England, had collected at their establishment in Jersey City, and consisted of more than 1,000 lots. The total amount realized was about \$7,000, and it would have been considerably more if the sale had been concluded. The day was too short, however, and some 200 of the lots catalogued were not reached. As a rule satisfactory prices were obtained, but some of the very finest Orchids sold for less than their real value. This was true of the superb specimen of *Vanda Sanderiana*, which brought only \$230. The original plant of *Cypripedium Boxallii atratum*, which was certificated by the Royal Horticultural Society of England, sold for \$160; *Cypripedium Chantinii*, Philbrick's variety, brought \$160, and a wonderful specimen of *Cattleya Mossia* sold for \$145. Perhaps the *Cypripediums*, all things considered, were sold to the best advantage. It was noted that the bidding was quite as brisk when darkness put an end to the sale as it was at the beginning. It was noted, too, that a larger proportion of the plants than is usually the case went to the trade about New York and Philadelphia, showing a confidence on the part of alert dealers that the demand for Orchids, and the best Orchids, is steadily growing in this country.

Referring to the popular idea that sulphur placed in holes bored in the trunks of trees will be dissolved and carried by the sap to the foliage in such quantities as to render it offensive to insects, a recent Bulletin of the Massachusetts Agricultural College Experiment Station says that it has been found upon cutting down trees which have been plugged with sulphur that the material remains unchanged for many years. It is added that while we are spending so much effort to prevent injury to our trees from borers we certainly ought not to make holes in them many times larger than those made by any known species of insect. In order to ascertain whether sulphur in soluble form can be introduced into a tree so as to affect the fungus growths causing rusts, blights and mildews, some large Rose bushes, badly mildewed, were treated with saturated solutions of potassium sulphide, hydrogen sulphide and ammonium sulphide. The liquid was forced into holes bored in the main stem with a small gimlet, and the orifice was plugged with grafting-wax. At first a slight improvement in the amount of mildew upon the leaves was noticed, but in September all the bushes but one were dead, presumably from the effect of the holes. Until further trials are made, this experiment indicates that while there may be some promise that antiseptics introduced into the sap circulation may prevent the growth of fungi, some safer means of introducing the solutions must be found. From the nature of the case it is hardly possible that any substance can be introduced into the circulation in sufficient quantities to affect insect life. Professor Maynard, who prepared the Bulletin, suggests that an inspection be made next season of the Elms in Boston which were bored and filled with chemicals last spring to make the leaves distasteful to beetles. Careful weighing would determine how much of the powder had escaped from the hole, and analysis could detect the presence of any excess of sulphur in the leaves.

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Autumn Work Among the Trees.

ALL planting north of the latitude of this city is most safely done in the spring. Further south the long autumn enables trees, planted when the leaves are ripe, to push out new roots and establish themselves before the ground freezes. But where cold weather follows close after the early frosts a tree planted in the autumn has no opportunity to develop new roots, and therefore loses not only the advantage it would have obtained in a more temperate climate in an early and vigorous spring growth, but it is forced to endure the severity of the winter without the aid of roots in active working condition. Trees planted in the autumn do not always die in the Northern States; but they are more apt to suffer than those planted in the spring; they are often blown over unless carefully supported; and they are frequently heaved by the frost or thrown out of the ground entirely. But for all the operations connected with the planting and the care of trees, except the mere setting them in the ground, the autumn is the right time. All planting plans should be completed, and all stock selected, at this season, and the ground to be planted should be prepared and ready to receive the trees. Our springs are so short and the rush of spring work is always so pressing that it is impossible to properly prepare the ground for planting unless it is done during the summer and autumn. This is the time, therefore, when northern planters should decide what trees they want to plant next spring, and just where they will plant them. It is the time to select and order nursery stock; and if the planter has any facilities for protecting plants through the winter in a cold cellar or pit this is the time to obtain them from the nursery, rather than in the spring, when nurserymen are crowded with orders, and too busy to devote proper time and attention to digging and packing their trees. The ground being prepared, the exact position of each plant determined on and the plants on hand, the mere setting them in the ground is the work of a short time. The man, moreover, who is thus prepared beforehand for spring planting can take advantage of the first suitable weather, and get his plants into the ground as soon as the frost is

out and it is dry enough to work; while if he waits for material ordered in the spring, very often it will not be received until after the trees have started to grow, and warm, dry weather has set in. In a climate like that of our Northern States, where summer follows hard after winter, and where spring is almost unknown, there is no other operation of the farm or of the garden which demands more carefully planned preparation—more forehandedness—than tree-planting.

The autumn, too, after the leaves have begun to fall from the trees, is the best time to study plantations with the view of determining which trees should be removed, and which of those which are to remain need pruning. The actual condition of a tree—its health and shape, and its relation to its neighbors—is best determined after the leaves, or many of them, have fallen; and if trees are to be marked for the axe, it should be done now, and before really cold weather or snow makes the critical examination of each individual practically impossible. The autumn, too, as has been explained in a recent issue of this journal, is the best time for all pruning operations intended to rejuvenate old trees or to bring unsightly ones into shape.

The man, therefore, who has trees, should devote some portion of these autumn days to determining how he can improve them by thinning or by pruning, or, if he is a planter, in deciding where his next spring's plantations are to be made, and what they are to be made of.

West Indian Fruit Growing.

A LARGE part of the September issue of the *Kew Bulletin of Miscellaneous Information* is devoted to the consideration of the fruit-producing capacity of the Island of Dominica, a subject of very great interest to Americans in view of the immense development, in recent years, of the tropical-fruit business in the United States and of the probability of its much greater development in the future. From its earliest settlement Dominica has been celebrated for its fruit. As long ago as 1791 great quantities of Oranges and Lemons of excellent quality were sent from the island to England and the United States, and some of the neighboring islands, less fortunate in natural conditions, were supplied from the Orange groves of Dominica. Sixty different fruits, indigenous and exotic, are described as reaching perfection on the island, which "of all the British possessions in the Lesser Antilles is now regarded as having the best promise of the development of a large and remunerative fruit trade, not only with the United States and Canada, but also with Europe. The islands lying between Dominica and the mainland of North America, with the exception, perhaps, of the small colony of Montserrat, are not adapted for the cultivation of most of the tropical and sub-tropical fruits, by reason of the droughts to which they are sometimes subject. Thus it happens that Dominica is the nearest fruit-producing island of the Lesser Antilles to the United States and Canada, and it is also the nearest of the West Indian fruit islands to Great Britain. This is an important fact in regard to the future of the fruit trade between Great Britain and North America and the Lesser Antilles, for with so perishable an article as fruit even a few hours' curtailment of an ocean voyage means sometimes all the difference between profit and loss. Possessing a fertile soil, unsurpassed in any other part of the world, an abundant rainfall, and a wide diversity of climate, owing to the mountainous nature of the country, the capabilities of Dominica for the culture of tropical and sub-tropical fruits can scarcely be over-estimated."

In spite of its natural advantages the fruit business of Dominica is still in an unsatisfactory condition, the value of the total fruit exports for the year 1887 having been under \$50,000, which is about three times, however, the value of the export ten years before. This is due no doubt to the want of energy and enterprise on the part of the

planters, who seem to take matters very much as they find them, and are satisfied to conduct their business as it was done a century ago, to the neglect of modern methods and improved varieties. This is especially true of the Orange business throughout the West Indies, which largely depends for its supply of fruit upon "trees which have grown up, in most cases accidentally, in gardens, in odd corners of estates, and by the roadside." That West Indian Oranges are as good as they are is only an indication of the fitness of the soil and climate of the Antilles for the production of this fruit. If half the energy and intelligence which have been directed to the improvement and cultivation of the Orange in Florida could be given to perfecting this fruit in islands like Dominica or Jamaica, the result would be astonishing, both in the quality of the fruit produced and in the profits of the business. The little island of Montserrat, now the principal centre of the Lime-juice industry, shows how profitable tropical fruit-growing can be made when carried on under ordinarily good methods. This business on the island is constantly increasing, and has already assumed very important proportions, and Montserrat Lime-juice is now sent all over the world.

It may be added, in this connection, that the Lime-tree now grows spontaneously on the south Florida Keys, producing fruit of large size and the very best quality. The climate of these islands is better adapted to the cultivation of this fruit on an extensive scale than it is either for Pineapples—which, although grown there in large quantities, suffer during cold winters, and are very inferior in quality to those raised in the West Indies—or for Coconuts, which have lately been planted largely in south Florida. The Coconut, it is true, bears fruit at several places on the Florida coast, but the fruit is small and not of first-rate quality, and can never compete with that brought to our markets from Honduras and other Central American countries. Lime-juice factories on Key West or on the shores of Bay Biscayne might be made profitable investments, and would do much to develop the resources and prosperity of southern Florida.

The Charles River at Wellesley.

THE Charles River, which pursues a very devious course through the eastern part of Massachusetts and empties into Boston Bay, is, of all the rivers of New England, the one that is richest in poetical associations. The Hudson, with the grandeur of which it would be foolish to compare the humbler loveliness of the Charles, is more widely known through prose descriptions, and has not failed of its meed of poetical praise as well. But the Charles is so intimately associated with the lives and writings of so many poets, that even the Hudson hardly appeals as strongly to those who know and love the literature of our country. Our illustration is given to show the character of the stream at a point considerably removed from that where it becomes the broad estuary so well known to every one who has visited Boston—a point where it is truly the Charles of the poets. And the picture should have a double interest, as revealing how much a view of this sort may gain by being set, so to say, in a frame. This particular bridge, which serves to carry the water which supplies the City of Boston, is not especially to be commended for architectural beauty—its curve is somewhat too widely spread and the size of its arch-stones is hardly sufficient to give the desirable impression of sturdiness. But it serves the purpose of a frame for the landscape well enough; and it need hardly be added that effects analogous to those produced by its arch can be produced, when openings of a less diameter are in question, by the skillful planting or cutting of trees. Take away this frame, and we have a pretty bit of river, but scarcely a picture; and a picture may be made of the simplest outlook which has any elements of beauty, either natural or artificial, by supplying

a frame of the proper size and in the proper place, no matter what materials may be chosen for the purpose. Even a rustic gateway may be so built as to serve this purpose, and in the shaping and disposition of the windows of a country house results of this sort should be more often considered than they are.

California Woods in Autumn.

ALTHOUGH California lies wholly within latitudes which, in other lands, give marked changes of the seasons, yet here neither spring nor autumn is very definitely characterized; autumn less so than spring, if that may be called a vernal season which begins in November or December, comes to a halt in January, thence gradually advancing to its perfection in April, a half year after it begins.

Between July and November the face of nature undergoes but little change; and only the eye of the artist or naturalist will perceive the transition to autumn. The Dahlias, the China Asters and the late Chrysanthemums are in the gardens, blooming at the right season, too, and these give a little of the autumnal aspect to village and home, especially where late autumn fruits are ripening on the trees, and eastern Elms and Maples, planted along the streets, are shedding the yellow or brown leaf. But out among the hills it is scarcely so. The native trees, even to the Oaks, are chiefly evergreen; and even such Oaks as are really deciduous retain their foliage in full color until the dark rainy days of December, baring their gray trunks and branches not until the ground beneath and around them is bright green with fresh growing grass like that of spring.

There are, nevertheless, some autumnal wild flowers in California; and even a few trees whose altered foliage imparts, in September, an autumnal aspect to the tree-clad slopes of all mountainous and hilly districts. Wherever, in the near or distant landscape, a patch of deep yellow comes out in contrast with the dark but vivid green of Oaks and Bays, one knows it must be a clump of the native Maple (*Acer macrophyllum*); a tree distinguished from all others of its genus by the uncommon size of its leaves, which, in California, are half a foot broad on thrifty trees, in Oregon even larger. It nowhere makes up a forest, or even a small grove, by itself; only two or three in a place, or, at most, an interrupted succession of them, ranging up and down the course of a ravine or brook, are what one sees of this species in its native wilds. The foliage ripens and turns to yellow long in advance of the earliest frosts, so that before the equinox it is in its richest and decidedly autumnal garb.

In the higher Sierra only, and chiefly toward the northern boundaries of the State, occurs a smaller Maple (*Acer glabrum*), the leaves of which acquire an almost crimson hue as the autumn days advance; but this species is never met with in the more settled, western regions of California, with which we are concerned. The only red leaves here are those of the Wild Grape (*Vitis Californica*) and of the everywhere too prevalent Poison Oak (*Rhus diversiloba*). This last is altogether distinct from its east American analogue, having foliage of firmer texture and more rounded outline. In its autumnal dress it is truly beautiful, but this is taken on, at least in some parts of the country, as early as August, before we begin to think of the fall of the year. The same is true of another small deciduous tree, the native Horse Chestnut (*Æsculus Californica*), whose fading leaves of yellow and red-brown are sufficiently autumn-like, in whatever more elevated districts they do not fall before the end of summer.

With Asters and Golden Rods, Pacific North America is not well furnished. In the western parts of California we have but two or three species of each; and the most common of the Golden Rods (*Solidago Californica*) is almost gone before the autumnal days begin. One of the Asters (*A. radulinus*), a white-flowered, low species, with a simple flat-topped corymb crowning the leafy stalk, is met with along the borders of roads and thickets, but scarcely elsewhere. This also comes near being a summer flower; but it is in pretty condition in the early part of September. The blue-flowered species (*A. Chilensis*) is taller and more showy, quite like some of the eastern Asters, and it flowers quite late, growing chiefly in low, half marshy grounds, not far back from the sea.

The characteristic autumnal wild flowers of California are the various species of Madia and Hemizonia, known in everyday life by the not very promising appellation of Tar Weeds. With an abundant resinous hairiness, such as most of the kinds are invested with, they are not pleasant plants to handle or to walk among; but they grow in masses, on open hill-sides,

by streamlets in the woods, in stubble fields by acres, their white or yellow flowers giving color to miles of territory, but only in the early part of the day; for their broad and handsome rays, at least those of most species, wither like the corollas of Morning Glories, or Four O'Clocks, as soon as the sun is in mid-sky. The tallest species (*Madia elegans*) is a strikingly showy, Coreopsis-like plant, altogether neat and graceful, however offensive its tar-like stickiness is to the touch. The rays, one inch long and deeply three-lobed, are of a lively yellow, with a velvety red base. The heads are borne loosely and somewhat pendent at the ends of slender, almost leafless branchlets, the main stem standing six feet high or more. No lover of things beautiful can fail to admire the uncommon grace and coloring of this *Madia*, as it lightens up the roadsides and banks of streams through miles of mountain forests.

Afar from the fields and waysides, in deep mountain shades, where, after the drought of more than half a year, the streamlets are still flowing, one may find in October fine masses of flowers and ferns; not strictly autumnal plants, yet such as, at least, have the faculty of putting forth just now a second and a truly autumnal display of color. Such are two or three species of *Mimulus*. We shall find no scarlet to match that of the *Lobelia* of eastern brook-sides, but the *Mimulus cardinalis* is scarcely inferior to that; and the banks of *Mimulus inodorus*, often two feet high, and seeming like an overgrown, large-flowered and scentless Musk *Mimulus*, are a charming sight.

Another plant, one of the Saxifrage tribe (*Boykinia occidentalis*), with most elegant foliage and loose panicles of white or pinkish flowers, lingers in bloom from June until October. Here, too, the brilliant pendants of *Euonymus* and the large red globes of *Cornel* berries (*Cornus Nuttallii*), and the falling acorns of the California evergreen Chestnut Oak, all blend their sweet influences, and make us feel that, even in California, there are autumnal days. *Edw. L. Greene.*

Oakland, Cal.

The Centennial of the Fuchsia.

IF there is one plant which has reached the maximum of popularity it is certainly the Fuchsia. Every one knows this charming shrub, with its highly-colored flowers. In winter one finds it in the green-houses; it decorates our homes in spring, and in summer it adorns our gardens, and it may be seen in every window.

It is just a century since the first Fuchsia (*Fuchsia coccinea*) was introduced into Europe. Since that time travelers in the mountains of tropical America have discovered numerous varieties and brought back specimens. A. De Candolle, in the "*Prodromus*," mentions twenty-six species, which number was increased to forty by Dietrich in his "*Synopsis Plantarum*." Now there are fifty distinct species known.

As to the number of varieties which are the result of the crossing of these species it is impossible to get even an approximate idea. Mr. Porcher, in the fourth edition of his work on Fuchsias, published in 1874, describes or mentions more than 300 varieties, selected from the most beautiful. Few plants lend themselves so readily to hybridization. We cannot discuss these varieties here, as it would require a volume to mention them even, but it may be interesting for some of our readers to know the primitive type of the varieties which they cultivate, or, at least, the groups to which they belong. We shall briefly summarize, therefore, the different sections under which Fuchsias have been arranged, with a short description of the species which have been introduced.

De Candolle adopts the following classification:

FIRST SECTION.

Calyx-tube cylindrical or obconical, narrowed above the ovary; leaves opposite, verticillate or rarely almost alternate; ovules in two ranks in each cell.

1. *Breviflora*.—Tube of the corolla as long as or shorter than the lobes, stamens included.

2. *Macrostemonæ*.—Tube of the corolla as long as or shorter than the lobes.

3. *Longiflora*.—Tube of the corolla two or three times as long as the lobes.

SECOND SECTION.

Tube gibous at the base below the ovary; ovules minute, grouped without order about a central placenta; leaves alternate.

This section included a single species only, *F. exorticata*, when De Candolle published his monograph.

FIRST SECTION.

1. *Breviflora*.—This group is composed of species with small flowers, nearly all of which are in cultivation.

I. CULTIVATED SPECIES.

F. microphylla, a handsome shrub, with numerous devariate branches and abundant small red flowers.

F. lycioides, one of the first species introduced. Brought from Chili by Menzies about 1796, and now rarely cultivated.

F. thymifolia, a species near *F. microphylla*, from which it may be distinguished by its nearly entire pubescent leaves and by its greenish sepals.

F. bacillaris, a dwarf species, with bright rose-colored flowers, the petals broad in comparison with the sepals.

F. cylindracea, with cylindrical flowers.

F. acinifolia, with very small leaves. Introduced about 1840, and now lost from gardens.

II. SPECIES NOT INTRODUCED.

F. tetradactyla, Guatemala.

F. Notarisii, Mexico.

F. spinosa, Chili.

2. *Macrostemonæ*.—In this group, which has few representatives, there are a small number of species in cultivation.

I. CULTIVATED SPECIES.

F. Magellanica (*F. macrostemma*, Ruiz and Pav.), first introduced under the name of *F. coccinea*. Several forms of this plant have been described by different botanists as species, and have been introduced into cultivation. Among them are *F. conica*, so named on account of the shape of the calyx; *F. globosa*, named from the shape of the flower buds. According to Don, this variety was raised from the seed of *F. conica*. It is possible, if this plant is only a variety, that it was obtained accidentally, although it is certainly found in a state of nature. Some authors are of the opinion that it is a native of Chili, and I have found it myself in May, 1876, in New Grenada. It is the only form of *F. Magellanica* that I saw growing wild. There is reason to believe, therefore, that it is not a hybrid, and the fixity of its characters will cause it to be considered, perhaps, a species. *F. discolor*, *F. gracilis*, and its variety, *F. decussata*, *F. recurvata*, *F. araucaria*, are also considered to be spontaneous varieties of *F. Magellanica*. The hybrids of these varieties obtained by cultivation are now innumerable. To this section also belong *F. coccinea*, a Brazilian species (*Botanical Magazine*, t. 5, 740), which was for a long time confounded with *F. Magellanica*; *F. arborescens*, which looks like almost anything rather than a *Fuchsia*; *F. racemosa* and *F. syringiflora*, varieties of this species, which is a native of Mexico; *F. alpestris*, a Brazilian species, with large leaves and inconspicuous flowers, rare; *F. peniculator*, near *F. arborescens*, was introduced from Guatemala in 1856, and is rarely seen in cultivation.

II. SPECIES NOT INTRODUCED.

F. ovalis, of Peru; *F. pubescens*, Brazil; *F. integrifolia*; *F. radicans*, Brazil; *F. verrucosa*, New Grenada.

III. *Longiflora*.—A group containing the largest number of species, most from the north-western part of South America, and corresponding to Endlicher's sub-genus *Fuchsia*.

I. SPECIES IN CULTIVATION.

F. corymbiflora, a species with large leaves and terminal clusters of dark red flowers. There is a variety with white flowers.

F. Boliviana, a species near the last, and introduced into England about a dozen years ago, and about which little is known.

F. fulgens, a showy Mexican species, with denticulate leaves and long vermilion-colored flowers hanging from the extremity of the branches.

F. dependens, near *F. corymbiflora*, but with smaller leaves in fours.

F. apetala, a species with apetalous flowers, less known than the following.

F. mærantha, discovered in Peru by Mathews, and by Lobb in Colombia, who sent it to Europe. Its flowers, without petals and with a very long, dark-reddish purple calyx, are very beautiful; unfortunately the plant is delicate.

F. petiolaris (*F. miniata*, Planchon and Linden), a native of New Grenada, with axillary flowers with a purple vermilion calyx and small red petals.

F. bensta, a species near the last, with vermilion-orange undulate petals; discovered by Humboldt and Bonpland, in New Grenada.

F. serratifolia, a handsome shrub, with bright, rose-colored axillary flowers. This species, a native of Peru, has furnished our gardens with many varieties.

F. spectabilis, introduced from Ecuador about 1848; distinguished by the length of its reddish-purple calyx tube. The spreading petals are vermilion.

F. splendens, a Mexican species, with the reddish-purple calyx tube contracted at the base, with green sepals and yellowish petals.

F. cordifolia, discovered in Guatemala by Hartweg, who introduced it into Europe. Near *F. splendens*, from which it may be distinguished by its cordate leaves and longer flowers.

F. penduliflora, a recent introduction; the flowers in axillary and terminal clusters; the calyx-tube crimson flushed with chestnut.

F. sessilifolia, a handsome shrub with long racemes of pendulous flowers, and with oblong-lanceolate, sessile leaves; a native of Colombia.

F. simplicicaulis, a species near *F. corymbiflora* and *F. dependens*; calyx-tube bright rose-colored; petals scarlet.

F. triphylla, the oldest species of Fuchsia known; flowers axillary and in terminal clusters of a uniform scarlet; leaves in threes.

F. caracaseensis (*F. nigricans*), is no longer in cultivation.

F. ampliata, a superb Peruvian species, with large, vermilion flowers.

II. SPECIES NOT INTRODUCED.

F. confertifolia, Peru; *F. Hartwegi*, near Huambia; *F. hortella*, Colombia; *F. sylvatica*, Ecuador; *F. umbrosa*, Ecuador; *F. canescens*, Colombia and Peru; *F. seabrinacula*, Peru; *F. agavacensis*, Peru; *F. ampliata*, superb species of Peru; *F. quindensis*, Quindio; *F. longiflora*, Andes of Q., rare, beautiful species to introduce; *F. loxensis*, Peru; *F. corollata*, Colombia, a very ornamental plant; *F. curviflora*, Colombia; *F. denticulata*, Peru; *F. memlezanacea*, Caracas; *F. salicifolia*, Peru.

SECOND SECTION.

In this section, for a long time, one species only was known; it was cultivated under the name of *F. excorticata*. Its strange flower was more peculiar than attractive, and it has been almost entirely dropped. To this species another has since been added under the name of *F. procumbens*, also interesting solely on account of its peculiarity. These two species are natives of New Zealand. An intermediate form between *F. excorticata* and *F. procumbens*, also found in New Zealand, and called by Hooker *F. Colensoi*, had not been introduced. This last Fuchsia concludes the list of known species.

In traversing the mountains of South America, pre-eminently the country of Fuchsias, I met with a number of these species, and was able to secure numerous specimens, amounting to twenty-two varieties. Sixteen had been gathered by travelers before me, two are new, and four cannot be decided upon, as the specimens are incomplete.

My new species are (1) *F. vulcanica*. Branches, leaves and peduncles covered with short, thick, white, bristly pubescence. Branches rounded with short segments, sessile, or nearly sessile, leaves, in threes or fours, elliptical or obovate, abruptly pointed, sparsely toothed, flowers few, solitary, axillary; peduncles short; ovary oblong, calyx red (?) bristly, especially in the young flowers, tube slightly curved, gradually enlarging from the base to the summit; lobes oval-triangular-acuminate; corolla glabrous, bright cherry-red, petals rounded, a third shorter than the sepals, stamen and style exserted. Volcano of Azufra (Colombia).—This Fuchsia is related to *F. ampliata* by the character of its flowers, but differs from it in a remarkable pubescence, perhaps unique among Fuchsias, and by its sessile leaves and by many other characters. (2) *F. scherffiana*.—Rounded branches, delicately bristled, leaves opposite or alternate, petiole with short bristles, full grown blade lanceolate—oblong, acuminate, very obscurely toothed, sciliate, with short bristles on the midrib and secondary ribs of the upper side, and on the midrib of the under side; almost glabrous elsewhere. Flowers few, solitary, axillary; peduncles slender, covered, like the oblong ovary, with a few short hairs. Calyx almost glabrous, ovary red, tube narrow and cylindrical from its base for a third of its length, then gradually enlarged and again cylindrical; lobes oval-lanceolate, long-pointed; corolla, scarlet; petals, oblong-elliptical; the point round cuspidate, a little shorter than the calyx. Stamens and style exserted.

An intermediate species between *F. petiolaris* and *F. triphylla*, distinguished from the first by its very elongated

leaves with rather short petioles, its oblong ovary, its smaller sepals and its glabrous petals without hairs; and from *F. triphylla* by its more elongated leaves and its flowers, which are few, larger and not in clusters at the ends of the branches.

The sight of the beauty of these flowers as they grow in their native land awakened the desire in me to see them more widely cultivated. By new crossings of wild species, interesting hybrids would certainly be obtained, and old varieties, of which the characters always turn in about the same circle, would be rejuvenated. *Ed. André, in Revue Horticole.*

Foreign Correspondence.

London Letter.

AS autumn advances the fortnightly gatherings of the Royal Horticultural Society become more and more confined to open-air flowers; and hot-house plants and flowers, especially Orchids, are fewer at each meeting. At last Tuesday's show the flower exhibits consisted mainly of Dahlias, which were represented by every class, and made a brilliant display. To these were added a magnificent group of hybrid Cannas from Messrs. Cannell, about which I wrote some time since; some excellent late Roses from the Waltham Cross roseries; a large and most interesting group of Pitcher plants (*Nepenthes*) from Mr. B. S. Williams; and a marvelous array of that splendid bulbous plant, *Nerine Fothergillii major*, from the garden of Baron Schroeder, which is as famous for its Nerines as for its Orchids. Fruits are, of course, one of the predominating features of the autumn meetings, and on this occasion Messrs. Veitch exhibited a fine collection, rich in varieties of Plums, Apples, Pears, Figs and other fruits, which proved a great attraction.

The certificated flowers and plants were more plentiful than usual, most of them being new sorts of Dahlias, chiefly of the show and fancy classes. I will not attempt to describe them fully, that being nearly impossible, as they differ so slightly from each other and from older sorts, while their tints are in most cases so subtle that one cannot invent terms for them. Of the true show and fancy types, the large and globular flowers with shell-like florets arranged with faultless symmetry, a large number were considered worthy of certificates of the first class. Of these Mr. Turner, the famous Dahlia raiser and grower at Slough, sent the following: Maud Fellowes, white florets tipped with purple; Admiration, crimson tipped with white; Hugo, crimson; Agnes, rich yellow. From another raiser came John Cooper, a large and superbly shaped flower, buff flaked with purple. The well-known Dahlia growers, Messrs. Keynes, of Salisbury, secured a certificate for their Matthew, an orange-yellow flower. The Pompon or Bouquet class was represented by numerous new sorts. Mr. Turner's certified sorts were: Vivid, scarlet; Juliette, pale yellow tipped with bright red; and Lothair, orange-red and crimson; while Messrs. Keynes showed Little Ethel, white; Little Darkie, maroon crimson (almost black); Whisper, yellow tipped with buff; Eurydice, purple tipped, with pink florets. The Juarezii, or Cactus flowered section, which is perhaps at the present time the most popular class of Dahlias among us, was represented by some new sorts of distinct and sterling merit, but only two were considered worthy of certificates. These were both from Messrs. Keynes; their names being Honora, a large flower of a bright, clear yellow; and Panthea, a delicate shade of buff yellow. Most numerous of all the classes, because so easily raised, is the single Dahlia, of which there was an endless array of new sorts submitted. The committee, however, do not award certificates for single flowers, except in special cases, because there are already in cultivation such a multitude of really fine kinds of all colors. The only sort certificated on this occasion was one called Lady Montefiore, a finely shaped flower with broad, flat florets of a clear yellow tipped with crimson.

Among other plants certificated was Geoffrey St. Hilaire, shown by Messrs. Veitch, one of the finest of a new race of hybrid Cannas which has been brought into notice recently. It has broad and large leaves of a rich, dark, vinous purple tint, while the massive spike of large flowers is of a brilliant orange-scarlet. It is one of the finest of those recently exhibited. When well grown it is fully five feet high, and makes a stately, fine-foliaged plant, and, like the others, flowers for weeks in succession. A second Canna certificated was that named Paul Bert, shown by Messrs. Cannell, of Swanley. It is not such a fine variety as the last named, but its brilliant scarlet-crimson flowers, borne on large spikes, were very effective. It is a fitting companion to the several new varieties for which Messrs. Cannell have won certificates this season. There is, without question, a bright future for this new race of stove and green-house plants, which, in a warm and dry climate, would flourish out-of-doors.

Nerine excellens, a bulbous green-house plant of great beauty, was worthily certificated. It is a near relative of *N. flexuosa*, a delicate growing kind with wavy petals, whereas the flowers as well as the trusses of *N. excellens* are larger and are of a soft rose pink barred with crimson red. It is as easily grown as the rest of the Nerines.

A Himalayan Lily, *Lilium Wallichianum*, came, as did the Nerine, from Mr. Ware's nurseries. It is an old and tolerably well known Lily, but not of the highest merit, inasmuch as it is capricious under culture. It is not hardy enough for open air culture exclusively, yet it dislikes artificial warmth. The flower itself is beautiful, being about eight inches long, with a slender tube and a wide-spreading mouth. The sepals are of ivory whiteness, but the tube is greenish. It grows about a yard high, and each slender stem bears a solitary, fragrant flower. It is a Lily for specialists; not for general culture.

A very handsome Composite from Colorado, *Aster Townshendii*, or, as it is also called, *A. Bigelovii*, proves itself one of the finest of all our hardy Michaelmas Daisies, and the committee did right in stamping it with a certificate of merit, though it can scarcely be called a new plant, having been in English gardens for over a dozen years. It has flowers about two inches across, with a broad, yellow disc, and long, narrow ray florets of a bright purple. It blooms very freely, numerous flowers being borne on the slender stems, which rise about two feet high. It is, with us, a true, hardy perennial of the highest merit.

Another Composite, also a hardy, herbaceous perennial from Mr. Ware, was certificated. This was a semi-double variety of the now well known *Harpalium rigidum*, a North American plant, one of the finest hardy perennials we have. The new kind (named Semi-plenum) has large flowers, with the florets so much multiplied as to appear to make a double flower. It is quite as vigorous and as free flowering as the type, while the yellow is brighter.

The last certificated novelty was a narrow-leaved form of the common garden Beet, named McGregor's Favorite. The leaves are about an inch broad by six inches long, and of a deep, bronzy crimson. The habit of growth is tufted, and not so coarse as that of the common edible Beet. It was certificated purely as an ornamental plant, as it is thought that it will be useful for the flower garden, especially in working out designs.

Among the other exhibits, the most noteworthy was a fine group of hardy shrubs from the Messrs. Veitch, which comprised such choice things as *Cratægus Pyracantha Lalandei*, with branches thickly laden with scarlet berries, brighter and more numerous than in the old kind; *Berberis Thunbergi*, which, however, was not shown in fine condition, the berries being few and the bushes not in vigorous health; *Daphniphyllum glaucescens viridis*, a variety with greener leaves than the type and quite as handsome. Among the cut Roses were blooms of such lovely sorts as The Bride, Sunset, Papa Gontier (which has at length reached us from America), Grace Darling, Grand Mogul, Lady Mary Fitzwilliam and Madame Gui-

noisseau, all of which are new or little known sorts that carry excellent autumn flowers.

Mr. B. S. Williams' group of Pitcher plants represented, for the most part, the pretty hybrids raised some years ago by Mr. Taplin in New Jersey. These are at once recognized by their small, neatly shaped pitchers, generally highly colored, and always borne in profusion. Those named Williamsi, Hibberdii, Amabilis, Morganiæ and Henryana are typical of this fine hybrid race, and are becoming quite popular in English hot-houses, being so much more easily grown than other Pitcher plants.

London, September 30th.

W. Goldring.

New or Little Known Plants.

Hibiscus lasiocarpus.

THE present figure represents one of a group of tall, large flowered American species of Hibiscus, which have been somewhat confused. Their distinguishing characters, as they have been defined by Dr. Gray, consisting mainly in difference of pubescence and color, are such as cannot well be shown in an illustration, so that our figure might be referred nearly as well to any one of the species as to another.

The swamp Rose-mallow, *H. Moscheutos*, is the most common of these, being found through the eastern United States, more frequent in brackish swamps and near the coast, from New England and Lakes Erie and Ontario to Florida and eastern Texas. Its pubescence is wholly a fine, dense tomentum, without any villous hairs, the upper surface of the leaves being nearly or quite glabrous. The flowers are white or rose-color, with or without a crimson base, and the capsule is glabrous or nearly so. The leaves are ovate to lanceolate and acuminate, rounded at base or somewhat heart-shaped, the larger ones usually three-lobed.

H. incanus is very similar, but has sulphur-yellow flowers with a crimson base, and the leaves appear to be mostly ovate-lanceolate. It is found in the swamps of South Carolina and thence to Florida and Alabama, but it has been very rarely collected. Its distinctness from *H. Moscheutos* and from the following species was recognized by Dr. Gray from specimens cultivated last season by Mr. Meehan.

H. lasiocarpus has its leaves nearly equally tomentose on both sides, or rather more coarsely so on the upper surface, and the bracts of the involucre are ciliate. The capsule also is more or less densely hirsute. The leaves are, perhaps, more frequently cordate at base than in *H. Moscheutos*, but the flowers are of the same color. This species ranges from the coast of Georgia to Louisiana and southern Illinois and westward. The extreme western form (var. *occidentalis*, Gray; *H. Californicus*, of Kellogg), of Chihuahua and the swamps bordering the rivers of California, differs merely in the leaves being more uniformly heart-shaped at base, and the capsule pubescent rather than hirsute. This is the form which is represented by Mr. Faxon in our illustration.

S. W.

Cultural Department.

The Cultivation of Ferns.

FERNS are propagated by the spores or seed and in some varieties by division of the plant itself; while with others, such as many of the Davallias and some other varieties that produce creeping rhizomes, the runners are pegged down and allowed to root, when they can be easily separated from the parent plant. A few others, Aspleniums especially, form small bulbils along and at the end of the fronds, which can be removed and rooted, or can be rooted first and afterwards separated. Those varieties that produce spores freely and can be readily increased in this way, are by far the most valuable to the commercial grower; and as the great bulk of our Ferns are so propagated, I shall speak of this method only. Nearly all the Adiantums, the Pteris, Onychiums, etc., the Ferns most useful for florists' work, can be quite easily propagated in this way. Yet the



Fig. 68.—*Hibiscus lasiocarpus*.—See page 425

work is rather tedious, requiring care and labor, and many disappointments may be experienced. The collection of the spores at the proper time is the first and all-important matter. This can only be done by close and frequent examination of the fronds—the dark color of the sori, and, if closely examined, the bursting of the sporangia or cases containing the spores, will indicate when they are ripe and fit to remove. The fronds

should then be cut and carefully wrapped in smooth wrapping paper, placing the packages in some warm, perfectly dry place. After a week or so the spores will have shed, when they should be sifted clean, and either sown immediately or stored away in tightly corked vials until ready for use. The sooner they are sown the better, however, as those of many varieties soon lose their vitality.

I would recommend spring and autumn as the best times to sow most varieties of Fern spores—those sown in the early fall will make plants for spring and summer sales, while the spring sowing will make stock for fall and winter. Some rapid growing kinds, such as *Pteris tremula*, should be allowed two or three months' less time, otherwise they will become too large for use. The soil used should be about three parts peat or leaf mould, two parts loam and one of sand; this should be sifted fine and then baked, so as to destroy any insects or other seeds that are sure to be in the soil, which, if allowed to grow, would soon crowd out the minute Fern plants.

Shallow pans, six inches square and two inches deep, are preferable to anything else. When the time for sowing arrives, the pans should be prepared by placing a thin layer of broken pots or charcoal in the bottom for drainage. They should then be filled with the prepared soil and the surface pressed firm and even. After thoroughly saturating the soil

close for a week or so after being potted and should never be allowed to become dry. After this first potting I use soil of about two parts peat, three parts loam and one of sand. It is not sifted now, but thoroughly mixed and chopped sufficiently fine for use. A certain portion of peat is preferable, yet when this cannot easily be procured, light fibrous loam and sand will answer very well; when Ferns are wanted for the fronds, it is really better than lighter soil. The fronds will be harder and keep better after being cut.

When once established in thumb pots the Ferns are comparatively safe, and the care is merely a matter of potting on as larger plants are required. Starving for want of a larger pot will seldom kill them; they can be kept a long time, if necessary, in this condition, and then, if shifted on, will start ahead immediately and make the best kind of stock in a very short time.

Established plants should be allowed plenty of fresh air and water when the weather will permit, keeping the houses well



The Charles River at Wellesley.—See page 422.

with water the spores must be lightly dusted over the surface. This one watering before sowing will generally be sufficient until the green scum, denoting the first stage of growth, appears, especially if the pans are placed an inch or so apart in the rows, so as to leave space for watering between. Watering overhead should not be practiced if it can be avoided during the earlier stage of growth. After planting the pans are arranged in a close, well shaded frame. They should be kept close until the pan is covered with the mossy looking growth, the sash being raised only a little every day to permit a change of air. If the weather should be wet and hot, more air should be admitted; fungus and damp must be prevented, if possible, and, as growth advances, more air should be admitted until the time arrives when it will be necessary to close the sash only during the sunny and dry part of the day, and then only partly. The plants must never be allowed to get dry, but should be kept moist, although not too wet. When large enough, my custom is to transplant small clumps into other pans. This is done as a precaution against damp and fungus; when crowded together they will damp off very easily, and, besides this, many plants will be crowded out. The transplanting causes some trouble, but it pays, for, when less crowded, the young Ferns make much better headway. When sufficiently rooted, individual plants should be separated and transplanted again into pans and should be left there until well enough rooted to pot off into thumb pots.

For the first potting the soil should be about the same as that prepared for the seed. The young plants should be kept

shaded during the warm months of the year. In winter much less water and no shading is required. If kept too close and dark, then the condensation of the moisture in the house will cause the foliage to damp.

This applies only to those easily cultivated varieties of Ferns that are grown in large quantities to supply the store trade. Some of the choicer kinds—those that can only be propagated by division, for instance—require far more careful handling.

Adapted from an address at the Florists' Convention, by C. D. BALL, Holmesburg, Pa.

Herbaceous Plants in Frames.

AMONG what are known and grown as hardy herbaceous perennials are many kinds of plants that had better be wintered in cold-frames than trusted to the uncertainties of the weather in open borders. Some of these, for instance *Lobelia fulgens* and *Pentstemon Hartwegi*, are not quite hardy here; others, as *Helleborus niger* and *Cyclamen Europaum*, although hardy enough, can only be enjoyed when grown under cover of houses or frames where we can have their blossoms clean and perfect; and although *Anemone Japonica* and *Verbena venosa* can be mulched with sufficient care to protect them from any injury by frost, it is much less trouble to lift the roots that are needed and save them in a cold-frame. Tritomas and Pampas Grass, too, may be mulched with dry Oak leaves deep enough to exclude any frost from the soil; but here again there is a danger that water may collect around the crowns of the plants and rot

them, and it is safer to lift them with good balls of earth, and keep them in cold-frames or pits. Wallflowers, Hollyhocks and Canterbury Bells are among the commonest flowers in European gardens, but rare in ours because they are not quite hardy. True, with a mulching of dry leaves we may preserve them fairly well, and it sometimes happens that they survive the winter unprotected; but in order to preserve them surely and in good condition the frame must be resorted to, especially in the case of Canterbury Bells. The place in which a plant is growing in the garden often has a great deal to do with its hardiness. Double-flowered Daisies and *Primula Japonica*, for example, growing in open, exposed situations, would probably be winter-killed, whereas if grown in somewhat sheltered places, as in the neighborhood of light-rooting shrubs, they would be hardy enough. But in any case the frame is the safest place for them. In ill-kept gardens and in wild places many plants will survive the winter that would surely perish in prim, well-kept gardens. In neglected gardens, after the glow of summer is over, the plants are disregarded and the weeds allowed to grow; the old stems are not cut over from the Pæonias, Larkspurs, Veronicas or Pentstemons, and when the tree-leaves fall they gather and compact themselves around these plants, and are there retained by the stems broken and bent over them by the winds. This is the best and most natural protection, for the stems arising from the crown of the plant prevent the leaves from becoming a solid, wet mat over the crown in winter. This is the way wild plants are preserved. But in tidily-kept gardens where an accumulation of dead stems and loose tree-leaves is not tolerated, the hardy plants, after being cut over, must be mulched with a dressing of rotted manure, or a thin layer of thatch or sedge, while Santolinas, Acanthuses, scarlet Anemones, Gibraltar Candytuft, *Myosotis dissitiflora*, *Helianthus multiflorus*, Alstræmerias, young Snapdragon, *Stokesia cyanea*, herbaceous Erythrina, *Senecio pulcher*, *Salvia Pitcheri*, Libertias and Zauschneria, and all others of whose perfect hardiness there is any question, should be removed to cold-frames.

These frames should be in a warm, sunny, sheltered part of the garden, and on slightly rising ground, with a south or south-east facing slope, so situated as to drainage that no water can lodge about them or run towards them. For such frames pine plank or hemlock boards are best; spruce rots out in a couple of years. As hemlock warps and slivers, the upper board all around should be pine plank, and under that hemlock will answer. Pine cross-bars drilled along the middle should be used for the sashes to rest on. The three-by-six-foot sash is the best and handiest made, and for this sash the frame should be five feet nine inches wide inside; this allows a solid rest for the sash, and the water can run off without wetting the frame. For ordinary use a cold-frame need not be deep, twenty inches at the back and ten inches in front is a serviceable depth; but even this should not all be above the ground level—twelve inches at the back and six inches in front is high enough above the outside level, and even then the frame should be banked up solid to the top with earth or ashes to keep all snug and warm. The more pitch the frame contains, the better will it shed the water and the warmer will it be in winter.

In filling these frames plant thickly, keeping the tall-growing and evergreen plants towards the back, and the low-growing ones near the front, and use light rather than rich soil. This is merely a winter store-house, and not a place to encourage growth and blossoms, as is the case with frames filled with Pansies, Primroses, Forget-me-nots, Crown Anemones and Violets, which are to grow and bloom during the winter months.

Glen Cove, N. Y.

William Falconer.

Orchid Notes.

Cattleya Bowringiana.—This comparatively new species is now becoming popular, and is likely to prove a great acquisition by filling the gap between the summer blooming Cattleyas and the early Percivaliana or Trianae. In growth and inflorescence it somewhat resembles the old *C. Skinneri*, but the flower, though a little smaller, is much superior in color, while the lip is enriched with a broad band of dark purple. The flowers appear before the growths are quite matured and last three weeks in perfection. It is a free grower, emitting a perfect mass of roots from the peculiar swollen base of the bulb. It should have strong heat and abundance of water during growth, but requires a long rest in a cool house, and should be started as late as possible in the spring, so that the flowers may appear in the early winter months.

The rarest Orchid in flower with us now is *Angraecum caudatum*, a native of Sierra Leone. Though not at all showy, the greenish brown of the flowers, contrasting so beautifully with the snowy whiteness of the lip, and the grotesque arrangement of the long-tailed flowers on the raceme, render it attractive and interesting. It is of erect growth, with thin, drooping leaves, about one foot long; it is growing freely here with the Vandas (which, by the way, we accord more heat than is usually recommended for them), in a basket filled with moss and charcoal. Black thrips will soon disfigure the foliage, unless care is taken to keep it well supplied with water at root and copiously syringed during favorable weather.

Another species from the same locality is in flower, *Angraecum distichum*, one of the smallest of the genus, producing stems about six inches high, with very short, fleshy, deep green, imbricate leaves, from the axils of which the flowers appear. These are very small and pure white, but so numerous that a well grown plant will often be one mass of bloom. Basket culture is best suited to this plant, with a compost of half peat and moss. Pegging down the stems will cause them to break freely at the heel, and so quickly make a bushy plant.

Erides quinquevulnerum.—Though nearly half a century has elapsed since the introduction of this Orchid, it has never, until recently, been plentiful. It grows more freely than many of its congeners and may be depended upon every year to produce its handsome racemes of flowers. It is probably the showiest of the whole genus. The flowers are yellowish white, much speckled with purple, with five large blotches of the same color, which suggests the name. The flowers are also fragrant. A very rare variety, named Farmeri, is entirely devoid of any markings. This plant is from the Philippine Islands, and, consequently, should have heat and water liberally given. To avoid spot, care should be taken that the temperature be not low when the plant is wet.

Kenwood, N. Y.

F. Goldring.

Native Asters as Garden Plants.

IT is only within the last few years that our native Asters have been considered fit subjects for the herbaceous garden, although in England they have been long appreciated, and Michaelmas Daisies, as they are there commonly called, form a part of the stock of the best nurseries. Flowering as they do, very late in the season, it cannot be denied that their decorative value is of the highest order, for they defy cold weather, and are but little injured by the fall rains. Long after their more tender rivals have succumbed to the severe frosts these Asters bloom away as though they rejoiced in the chilly weather, and seem many times more beautiful from the contrast with their brown and frost-bitten neighbors. If we have made a judicious selection of species and varieties, and exercised proper judgment in planting them, the garden will be a source of pleasure for a long time after the more costly, and often less beautiful, exotic summer plants have been cut away.

But the value of these plants does not lie entirely in their sturdiness and their ability to prolong the season of flowers, for they have an intrinsic beauty that compels our attention. Few people question the beauties of the perennial Phloxes as they are now grown, but we have to look back but a few years to find these much-admired plants represented by a few dull purplish-pink and white varieties, with small flowers and narrow petals. In their wild state the flowers of *Phlox paniculata* and *P. maculata* (the parents of our garden varieties) are quite inferior to many of the wild Asters, which undoubtedly are fully as capable of improvements, for, naturally, most of the Asters vary to a surprising degree, and, by careful searching, one may find varieties far superior to the types, and these should be carefully transplanted to the garden. It is best to collect them while in flower, for the best varieties may then be selected, and by transferring them to nursery rows they can be tested before placing them in a permanent position.

Out of the great number of species native to the United States the following are among the most useful: *Aster Nova-Engliæ*, with large, deep blue-purple flowers, when given good cultivation, is a grand plant, growing to the height of six or seven feet, and literally smothered with its showy blossoms. Its variety, *Roseus*, is identical in every way except color, which is a bright rosy pink. *A. laevis* has deep violet flowers, like small Cinerarias, and will grow to the height of five feet. *A. Novi-Belgii* is very variable, both in habit and flowers, the best varieties being very handsome and useful. In color the flowers vary from pure white to deep purple. *A. turbinellus*

is very graceful in habit, with slender, much-branched stems, the large lilac-colored flowers appearing late in the season. Other satisfactory kinds are *A. Shortii*, *A. undulatus*, *A. cordifolius*, *A. patens*, *A. spectabilis*, *A. oblongifolius*, *A. amethystinus*, *A. piarmicoides*, *A. linearifolius*, with its white variety, *A. ericoides*, *A. vimineus*, *A. multiflorus* and *A. dumosus*.

They need about the same treatment as would be given to the perennial Phlox, many of them doing much better when thinned out annually, as they are subject to mildew if grown too thickly, especially if they are somewhat shaded.

Newton Highlands, Mass.

Arthur H. Fewkes.

Mildew on Roses.

HOW best to prevent mildew, or to clear the Roses of this troublesome fungus after it has made its appearance, is a question that often confronts the grower, and particularly at this season of the year, when the sun is still strong at mid-day, and so heating the houses that considerable ventilation is necessary to reduce the temperature. This operation often results in an attack of mildew upon such plants as may have been exposed to a cold draught.

Among the many remedies for mildew, sulphur, in one or another of its many forms, is always found most efficacious, and it is used in a variety of ways. The flour of sulphur has been used for many years for this trouble by dusting it over the mildewed plants. This mode of using sulphur is undoubtedly good at times, but in my experience a better way is this: Take of moderately strong tobacco-water, one gallon; add to it four ounces of sulphur, then boil the mixture for thirty minutes or a little longer. After it has cooled add one part of water to every three parts of the mixture, and syringe the affected plants. In bad cases a second or even a third application may be necessary on successive days. This mixture also tends to keep down green fly, thereby doing double duty.

Another mixture in great favor with some growers is sulphate of lime. A good recipe for this compound is the following: Take of fresh lime, five pounds; of sulphur, five pounds, and of water, six gallons. This should be boiled down to two gallons. After which it should be allowed to settle, and only the clear liquid should be used at the rate of half a pint of the sulphate to an ordinary watering-pot of water. The plants should be syringed with the latter mixture on two or three successive afternoons.

Sulphate of potassium has also been highly recommended, in the proportion of half an ounce of the sulphide to two gallons of water, and applied in the same manner as the preceding mixture. The unpleasant odor of the potassium solution may sometimes prove to be an objection, however.

Still another way of using the ordinary sulphur is by sprinkling or painting it on the pipes, the heat from which causes more or less of the sulphur to pass off into the atmosphere in the form of vapor. This latter method is hardly to be recommended for general use, for, unless used with great discretion, the vapor may be strong enough to bleach the flowers of many of the pink Roses, such as Catherine Mermet, La France and Bon Silene, and in this way may do almost as much harm as the mildew. As the above-mentioned Roses are also affected by tobacco-smoke, the mixture of tobacco-water and sulphur previously mentioned will be found particularly useful in just such cases.

Holmesburg, Pa.

W. H. Taplin.

Very few so-called hardy perennials are sufficiently hardy to endure a northern winter without protection of some kind. This is what should be expected where many kinds we grow come from southern latitudes as well as from the temperate regions of the Old World. Truly herbaceous plants, such as tall Phloxes, Delphiniums, Asters and Helianthus, which die down completely, need the protection of stable manure, since in gardening operations, for the sake of neatness, we must remove from the ground the tops, or refuse, of the plants, which are their natural protection. Others, again, mostly biennials, such as Foxgloves, Sweet Williams and other species of Dianthus, Gaillardias, Geums, Canterbury Bells and Pansies, retain their foliage naturally, and when not removed to frames should be protected by leaves or pine needles to prevent alternate freezing and thawing. The same plan should be adopted with alpine plants, some of which are truly herbaceous, such as *Adonis vernalis* and *Ranunculus* of different kinds, while the majority are evergreen, such as dwarf Phloxes, Veronicas, Cerastiums, Arenarias and Iberis.

There are also many kinds, of which stock is required, which can be taken up and propagated during the winter. All such as we can push into growth and get cuttings from, we

bring into the green-house about February 1st. Others we divide up and pot about March 1st, keeping them in the green-house only long enough to start them, and then place them in frames until the ground is open for planting. The cuttings—Phloxes, Veronicas, *Silene rupestris*, *Salvia Greggii*, *Oenothera Missouriensis*, Monardas, etc.—we put into boxes, partly filled with sand, and covered with a sheet of glass; when rooted we gradually harden them off to be planted later in nursery beds.

Wellesley, Mass.

T. D. Hatfield.

The New Tea Rose, Madame Hoste, is likely to prove the best of the year for cut flowers in winter, under glass, and suitable both for the amateur and the commercial grower. It is a French Rose, and it was sent out for the first time last November, and has, therefore, had no very extensive trial in this country. It plainly possesses all the good qualities of a Rose for winter blooming. It is very large, though opening freely, and has not the least suggestion of coarseness. Its form is of the best, and its color is the only thing to be urged against it. It is neither yellow nor white, but may be described as cream color, deepening to a darker shade towards the centre of the flower. It is so beautiful in every other respect that it must work its way into public favor. The plant is a vigorous grower and a free bloomer, and we may expect it to do well out-of-doors in some parts of the country, since it is well spoken of by English horticulturists who have tried it in that climate.

Philadelphia.

E. L.

Callicarpa purpurea is particularly handsome just now; indeed, it is the only time of the year when it is. The flowers are so very small as not to be worth considering, but following them are berries in clusters of about twenty to thirty each, which in September and October are of a violet-purple color. As every leaf axil has a bunch, and the branches are sometimes two to three feet in length, bending over with the weight of fruit, it is an uncommonly beautiful sight.

The most strikingly beautiful tree, in flower at the present time in the vicinity of Philadelphia, is the Franklinia (*Gordonia pubescens*). It flowers when but a few feet high, commencing in August, and continuing until freezing weather stops it. There are many fine specimens hereabouts; one of the largest, a layer from the original tree in the Bartram garden, is at William De Hart's, Fifty-fourth Street and Woodland Avenue, Philadelphia. It is about twenty feet high, and at the present time (early October), loaded as it is with its large, single, white, Camellia-like flowers, it is an unusual and beautiful sight. The tree can be increased by layering. If good soil be placed about it, and the layer not disturbed for two years, a strong, well-rooted plant results.

Referring to the notes sent you in the spring in regard to the hardiness of the Loblolly Bay (*Gordonia Lasianthus*), I would now add that one of the plants flowered September 15th. May not this be the first instance of its flowering out-of-doors so far north? The blooms, while in general appearance like the better known *G. pubescens*, are but about half the size. The leaves are thick and shining, and not unlike those of *Photinia serrulata*. Nearly all of the twenty-five plants set out last year survived the winter, though injured more or less. Having now become better established, they will doubtless get through the next winter more easily.

Germantown.

Joseph Mechan.

The Forest.

The Forest Vegetation of North Mexico.—VIII.

Pinus macrophylla, Engelm., the species which, next to *P. Chihuahuana*, grows at the lowest elevation, is the first tree to claim our attention as we proceed to consider in detail the composition of the forests of the Cordilleras. On all the ranges about the divide we have seen it scattered with the species last mentioned; but in some localities among these ranges it must be more multiplied, since there are several saw-mills in the region. About the base of the mountains on the foot-hills and in the valleys amongst these it is by far the most abundant Pine; whilst over the gravelly plain bordering the foot-hills it spreads out for a few miles to the exclusion of most other trees. Because it makes a larger growth and yields clearer lumber than *P. Chihuahuana*, is more accessible than *P. Arizonica*, and far more common than *P.*

strobiformis, it furnishes nearly all the lumber now cut in the region, the two mills of the vicinity drawing their supply from the plain. In the deeper soil of the plain, where it attains fullest development, its diameter is from one and a half to more than three feet, and its height from forty to seventy feet. Never standing crowded on this plain, its branches are ample. As these begin low on the trunk, the majority of the trees afford but one or two saw-logs. The character of its bark is equally variable with that of *P. Arizona* and *P. ponderosa*, and is undistinguishable from that of these two species, in trees of middle age being dark and more or less furrowed; in mature specimens reddish, smoother and reticulately cracked. Vigorously growing trees in open situations, the symmetrical outline of their broad heads closely filled out with dark green foliage, to which its long leaves (ten or fifteen inches long) give a massive look, its summit distinctively an ogee arch rather than a dome, present an appearance of unusual beauty.

Here on the Cordilleras we seem to have reached the centre of distribution of *Pinus Arizona*, *Engelm.* In this great Mexican forest this species seems to take the place, in respect to abundance, wide distribution and value as a timber tree, held in the forests of the western United States and British Columbia by the closely related *P. ponderosa*, *Dougl.* It ranges through 3,000 feet of elevation from the valleys and cañons of the base to the highest summits. In the deep cañons and fertile valleys it is unsurpassed in size, showing lofty, clean stems three feet in diameter; on the summits it is still a noble tree, and, taking scarcely disputed possession of these, it there forms close forests. Its lumber seems to be prized by the Mexicans equally with that from *P. macrophylla*; but, because the trees are mostly found at a greater elevation, it is far more difficult to secure.

Pinus strobiformis, *Engelm.*, as far as I have observed it, appears to grow scatteringly—a few trees scattered along cañons, a lone specimen here and there on high, cool slopes, or a few on the ledges of summits on the skirts of belts of *P. Arizona*. Such, also, is my recollection of its habit (if we refer to this species, *Engelmann's P. reflexa*) on the mountains of southern Arizona. Nowhere have I yet seen a good grove of this Pine. Its short horizontal branches and tall stems give it an appearance exceptionally slender for a Pine. A diameter greater than two feet, I think, I have never seen exceeded, while its height equals that of any of its companions. As it is one of the White Pines, with characters of bark and leaves closely resembling those of *P. Strobilus*, its lumber, if obtainable in any amount, would doubtless be found of the best class.

Pinus Chihuahuana, *Engelm.*, appeared scattered abundantly over the lower benches and foot-hills, a small, slowly-growing tree, as usual, and here safe from the lumberer's axe.

Only one other Pine, seen by me as yet on the Cordilleras, remains to be described, *Pinus cembroides*, *Zucc.*, the Mexican Nut-Pine, which, like the related species, *P. edulis*, of New Mexico; *P. monophylla*, of Utah, and *P. Parryana*, of Lower California, contributes largely to the sustenance of the Indians by its large oily seeds. For any other purpose this tree is comparatively worthless. Its habitat is the warmest and most arid slopes and ledges with meagre soil, where even *P. Chihuahuana* will seldom crowd upon it. Occupying together with a few shrubs such open situations, its branches near its roots, and forms a rounded top, whose breadth equals its height, which is from fifteen to twenty feet.

C. G. Pringle.

The Forests of Europe.

THE French Ministry of Agriculture has issued some interesting statistics respecting the distribution of forests in Europe. The total area of Europe laid out in forest—exclusive of Turkey, Bulgaria, Bosnia and Herzegovina, omitted in the official statement—is set down at 286,989 million hectares, or about 708,862 million acres; that is, about 18.7 per cent. of the

total area of Europe is forest land. In proportion to its total area, Great Britain and Ireland has, of all countries in Europe, the least extent of forest, amounting to only 4 per cent. of its surface, and, in proportion to the number of its inhabitants, enjoys, by far, the least allotment of forest, amounting to only 0.036 hectare, or 0.089 acre, *i.e.*, considerably less than the tenth of an acre to each inhabitant. The country in Europe next lowest in the forest scale is Denmark, with 4.8 per cent. of forest land, or 0.09 hectare to each inhabitant; that is to say, in Denmark there is an average of between two and three times the extent of forest land to each inhabitant that there is in Great Britain and Ireland. The third of the countries of Europe in the ascending forest scale is Portugal, with 5 per cent. of forest land and 0.11 hectare to each inhabitant, *i.e.*, an average of three times the amount of forest land to each inhabitant of Portugal that is allowed to each inhabitant of the United Kingdom. Holland has 7 per cent. of forest land and 0.05 hectare to each inhabitant, or about one and a half times as much as to each inhabitant of the United Kingdom. The country in Europe possessing most forest is Russia in Europe, with 200,000 million hectares—*i.e.*, 37 per cent. of its whole area and 3.37 hectares to each inhabitant—that is, each inhabitant of Russia in Europe has an average of nearly 94 times the extent of forest land allotted to each inhabitant of the United Kingdom. In its percentage of forest land and the amount of forest to each inhabitant, Sweden, however, stands still higher. With 17,569 million hectares of forest, Sweden has 39 per cent. of its land in forest, and so 3.84 hectares of forest to each of its inhabitants. Norway, with 24 per cent. of its area in forest, allows each of its inhabitants an average of 4.32 hectares of forest, or 120 times as much as is allowed to each inhabitant of the United Kingdom. Hungary has 29 per cent. of its area in forest, or 0.58 hectare of forest to each inhabitant. France possesses 9,888 million hectares of forest, or 17.7 per cent. of its total area, and so allowing 0.25 hectare of forest to each of its inhabitants—nearly seven times as much as is allotted to each inhabitant of the United Kingdom.—*The Garden.*

Correspondence.

The Responsibilities of Florists.

To the Editor of GARDEN AND FOREST:

Sir.—Your recent editorials on the responsibilities of our florists seem to me a word spoken in season. It is true that our florists have done much to improve the taste of the public, but there is still much for them to do. It does not need that one should be of a great age to remember when no taste whatever was shown in the arrangement of our winter flowers. Solid, flat or spherical or conical constructions of wired flowers, massed together without foliage and with no regard to the shape of individual blossoms, were the only bouquets in use. The first novelty in the right direction came from Boston in the shape of bunches of long-stemmed flowers, chiefly Roses, which, even in other cities, were called "Boston bouquets." Eagerly accepted by the public, they soon ousted the formal bouquet and their influence was quickly perceptible in arrangements of all other kinds. To-day, as you say, one can buy flowers in no other part of the world so beautifully arranged as we can buy them here, except, perhaps, in Paris; and even Paris is behind us in the matter of variety. The Germans arrange their growing plants more tastefully than we do, but of the artistic possibilities of cut flowers they have duller perceptions, and the practice of wiring is far more extensively practiced than in America.

Nevertheless, it is only in a few of the best shops in the larger cities that taste is displayed. Our best work is very good, but our worst—and there is still a great deal of it—is undeniably bad. A long list might be made of "floral designs" recently produced and viewed with satisfaction by their authors and the public, which would seem too bad to be true in a community which calls itself civilized. Not long ago I saw carried through the streets of New York on the wagon of a florist a horse about half life-size, composed of white Immortelles, with the saddle and harness of colored flowers and a flowing mane and tail of Pampas Grass. I am told that at the funeral of an expressman in Boston there was, not long ago, displayed a large trunk of white flowers bearing, in red, the poetic legend "C. O. D." I know of a florist in Chicago who wrought for a funeral a white pillow in the centre of which was a purple horse-shoe, and who could not be brought to perceive the grotesqueness of thus placing the symbol which means "Good luck to you." And here is a quotation from a Boston paper describing a device which was sent to the bier of General Sheridan and called "one of the most beautiful" of its kind:

"The piece is nearly six feet high, six feet long and four feet in width, and represents 'Gates Ajar.' In the centre are two large pillars, from which are hung two gates. Joining the pillars is an arch, having in the centre a cross and crown. Suspended from the arch is a pure white dove, and on the top of each pillar is a large star. Looking through the open gate and picket fence is a representation of the Garden of Eden, in which flowers, roses and ferns abound in artistic profusion. On the right corner is a beautiful bouquet of roses tied with satin ribbon. Across the front is the inscription, 'Light lie the earth on thee.' Some 4,000 Asters and a large number of Crimson King Carnations, Chrysanthemums and Roses were used in making the piece, which will be sent as the gift of a number of United States Senators."

So long as pretentious abominations of this kind are created how can we really congratulate ourselves on our taste? And who could look at the use that was made of flowers last Decoration Day, and feel that, as a people, we had a proper sense either of the beauty of flowers or of the meaning of the word decoration in its general sense?

I know that it must be extremely difficult to do really well on public occasions like this, when a hundred hands must help to dispose of a myriad gifts of all possible varieties and degrees of beauty. But the fact is not that we did not do really well, but that we did so very badly, that, in New York, at least, as I can say from careful observation, few examples could be found where a spark of good taste was apparent. Here not the florist, but the public at large, was perhaps responsible; and doubtless in the case of many of our worst "set pieces," like the expressman's trunk, the purchaser gives the idea, and the florist is simply charged with its execution. But in many cases the florist may be to blame; and in all, I believe that a word of discouragement and better advice from the florist would change the current of the purchaser's wishes. It is hard to say, in this as in all other matters, just how the law of supply and demand affects the results we see. But, as one of the public, I wish to emphasize your statement that if florists will consistently point in the right direction the public will surely follow. If it likes bad things, it is because it has not seen enough good ones to know the difference. The taste of our people is not naturally bad; it may be uncultivated. Show them excellence, and they will admire, and when they next see ugliness they will recognize it for what it is. Anything really lovely is sure to find a welcome even from the casual passer in the street. The most tastefully arranged florists' windows in New York are those which people stop to notice—not the windows which contain the greatest amount of novelties or the most striking flowers. An example of this fact struck me forcibly last winter. Many windows, filled with a profusion of costly blossoms, tastelessly heaped together, were unremarked, while there was a constant crowd around one which showed nothing but a mass of Ferns and other green, and in the centre a large plain blue vase, in which stood half a dozen branches of pink-flowered Japanese Plum.

Marion, Massachusetts.

M. G. Van Rensselaer.

The Exhibition of the Architectural League.

To the Editor of GARDEN AND FOREST:

Sir.—The Architectural League of New York announces that its fourth annual exhibition will be held in December. In connection therewith a competition for the gold and silver medals of the League will be opened to all architects and students under twenty-five years of age residing in this country. A similar competition, organized last year, dealt with the designing of "A Clock Tower on a Village Green," and called forth some excellent drawings. The problem chosen for this year is "The Tomb of a Celebrated Architect." Admirably adapted to reveal the artistic skill and taste of those who will compete, as distinguished from their mere "originality" in impulse and audacity in execution, this problem is, moreover, one which, in the results we may anticipate on the exhibition wall, should be of particular interest to landscape architects and the public at large.

As has often been pointed out in GARDEN AND FOREST, our cemeteries are, in theory, one of our chief titles to respect as landscape gardeners and lovers of beauty; but, in concrete fact, they often fall below the ideal at which they aim. In no point is success less often achieved than in the erection of large and costly structures—vaults above ground, shafts, architectural monuments or sculptured figures—commemorative of an individual or a family. Year by year such conspicuous memorials arise in growing numbers in the burial-grounds near our large towns. In Greenwood, for example, there are very many, some of home manufacture, and others imported from Italian workshops. But, varying though they do between

the extremes of severity and ornateness, they seldom wear an aspect which even moderately satisfies the eye or corresponds with the sentiment which should prevail in such a cemetery. When they are not too gloomy to seem like monuments of the Christian dead, they are too frivolous; and even if the general effect is nearly right, the inartistic execution apparent upon a near view destroys much of their claims to approval. Some of the façades to vaults excavated in a hill-side look like ice-houses or coal cellars, others like the homes of Egyptian mummies. Some of the family tombs imitate little heathen temples, others suggest kiosks, and others soda water fountains. When sculptured figures are used, the hand of the stone-cutter rather than the artist is most frequently revealed; and the plainer shafts are too commonly devoid of the only qualities which could make them works of art—beauty of proportion and grace of profile. They might be taken as relics of some long past stone-age rather than what a community can secure which has architects to do its bidding. I do not doubt that there are other good large monuments in Greenwood, but the only ones I can recall at this moment are the graceful Gothic tomb which commemorates those members of the Brown family who perished years ago in the wreck of the "Arctic," and the Stewart tomb near the main entrance, the sculptured decorations of which were designed by Mr. St. Gaudens in his earlier years. This, which is a façade merely, the vault being excavated in the side of a bank, hits the right medium, I think, between over-sombreness and frivolity; the sentiment of its decoration is Christian, and in execution it is a work of art. It is dignified but not pretentious, beautiful but not obtrusive.

If the sculptor or the architect, in the true meaning of the words, were more often employed in similar work our cemeteries might speak with honor to the living as well as the dead. The coming exhibition of the Architectural League ought to mark a noteworthy step in this direction. Of course, as the competitors will be students and not practiced masters, the designs it shows will not prove—they can merely indicate—what good work we might secure in the way of mortuary monuments. Yet there are many men of skill and taste even among our novices in architecture, and doubtless some of the coming designs will be intrinsically worthy of much praise. The programme wisely guards against exceptional extravagance in design by prescribing within comparatively narrow limits the size of the tomb and of the lot upon which it shall stand; and although a tomb appropriate to a great architect may not give us with precision a type which would serve for ordinary mortals, yet its peculiarities may very likely be confined to its decorative motives alone. Therefore I venture to bespeak for the exhibition the notice of all who are concerned in the improvement of our cemeteries, and who believe that the way to improve them is to bring in the artist where the artisan has ruled too long.

New York.

George Cumming.

Japanese Iris from Seed.

To the Editor of GARDEN AND FOREST:

Sir.—In GARDEN AND FOREST, No. 34, page 402, Mr. A. W. Fewkes has an important article on raising Japanese Irises from seed. My experience differs from his in regard to the fertility of flowers which have not been artificially fertilized. Last year I bloomed ten plants for the first time. The plants were not large; one bore but a single spike of bloom, and many flowers were cut. From the seed which set and ripened from insect fertilization four hundred plants were raised this summer. During the present year some flowers were artificially hybridized; but those not so treated have, in almost every instance, developed full seed-pods. My culture does not differ essentially from Mr. Fewkes', so that no reason for the discrepancy of experience can be suggested other than a possible cause in the difference of locality.

Boston.

Robert T. Jackson.

Notes.

The delicate and fragrant flowers of *Clematis crispa* are still opening in considerable abundance. The vine has been in bloom five months.

Mr. S. H. Vines has been appointed Professor of Botany at the University of Oxford in place of Professor J. B. Balfour, who was recently called to Edinburgh.

Owing to the reduced state of the funds at command of the California State Board of Forestry, the offices of Botanist, Engineer and Special Agent have been declared vacant from the 1st of November.

According to Professor N. S. Shaler, the value of the artificial manures manufactured in this country from mineral phosphates already amounts annually to \$30,000,000, and the industry is but at its beginning.

The oldest Rose bush of which there is any authentic record is growing against the old church at Heltersheim, in Germany. Eight hundred years ago, it is said, Bishop Hepilo caused a trellis to be erected to support it. The main stem is thicker than a man's body.

The extraordinary force exerted by growing Fungi was well shown the other day in a New Hampshire village. It was noticed that a cone about seven inches in diameter was rising in the middle of an asphalt walk. Beneath it a Mushroom was discovered, which had cracked and raised a solid stretch of asphalt two inches in thickness.

Five new experimental stations for the study of Sorghum and its manipulation are being organized by the Agricultural Department in Washington. One of them will be in New Jersey, one in Louisiana and three in Kansas. The appropriation for the work exceeds by \$100,000 that of any previous year. Dr. Neale, of the Agricultural Station at New Brunswick, N. J., has spent the past summer studying European methods of sugar manufacture.

Vilmorin & Co. recently exhibited before the *Société Nationale d'Horticulture de France* the fourteen varieties of *Gladiolus Gandavensis*, which long experience shows to be the latest blooming of the innumerable varieties grown in the neighborhood of Paris. They are named: Abricoté, Atlas, Béatrix, Coquette, Docteur Fontan, Gallia, Médicis, Etna, Mimos, Rosini, E. Souchet, Eugene Scribe, Sceptre de Flore and Ambroise Verschaffelt.

Two of the three huge and ancient Oaks which have stood for centuries near the "Bush Mill," in the neighborhood of Frankfort-on-the-Oder, have recently perished through the effects of storms. The last to fall measured over twenty-one feet in circumference. Its top was blown off by the wind, and although the trunk was still sound, the Forestry authorities decreed that it should be felled. The one which remains has a circumference of twenty-three feet.

The large Bald Cypress (*Taxodium distichum*) in the old Bartram Garden, West Philadelphia, is still alive, though apparently near its end, as but a few live branches exist near its top. A recent measurement of this tree, at four feet from the ground, gave twenty-seven feet as its circumference. At a distance of about twenty feet from the trunk, along the ground, appear numerous "knees," which always excite curiosity in those who have not seen the trees in their native places.

The Countess of Kenmare has planted a large collection of Australian trees in her beautiful grounds near Killarney, in Ireland. As a proof of the mildness of the climate in this region, it may be noted that a *Dracana australis* flowered this season near Cork, after having been grown in the open air for seven years, and reached a height of fifteen feet. The head of bloom lasted in all its beauty for two months, and measured three and one-half feet in height by three feet in breadth.

The bad taste sometimes displayed in this country in the conception and arrangement of floral designs is quite as often and as conspicuously shown in other lands. For example, among the set pieces recently exhibited at a horticultural show in Cologne, there was one which represented a life-size baby in swaddling clothes, and another in which a swan was figured by means of the detached petals of Water Lilies. Beyond this last, misplaced ingenuity could hardly go; for, to dismember the flowers employed, is, of course, to deprive a result of all title even to the name of a floral arrangement.

The fruit growers of Sutter and Yuba Counties, California, after twenty-five years' experience, do not speak favorably of irrigation. At a recent meeting of the Sutter Horticultural Society many of them bore testimony against the practice. Instead of the use of water, they urged the use of cultivators and pulverizers in orchard and vineyard, which was regarded as better, cheaper, healthier, and certain to produce richer, sweeter and better flavored fruit than artificial moisture. The fruit grower, like the wheat grower, must plan to meet average conditions. He cannot plan for extraordinary seasons, or, in other words, he cannot create costly irrigation works that may not be needed once in twenty years. Besides, the driest hills and vales will not produce a bountiful crop of fruits with the most abundant artificial water supply every year; kind nature will have her rest occasionally.

Professor Maynard, of the Massachusetts Agriculture College, finds the Worden by far the best Grape to plant for profit in New England. It is equally hardy, productive, and of as good quality as the Concord and more than a week earlier. We find it a decided improvement on the Concord in quality. Professor Maynard pronounces the Brackman more vinous in quality and nearer the perfect Grape than any variety except Iona. It ripens with the Delaware, but is not quite as sugary. In foliage it resembles the Clinton and it has not mildewed. The fruit of the Iona is of excellent quality, but it is tender, with foliage liable to mildew and fruit to rot. If subsequent experience confirms the last two seasons' trial of the Brackman, which so closely resembles it in fruit, this Grape will prove a valuable addition to New England vineyards.

One of the finest gardens in India is that of the Nizam of Hyderabad in the Dekkan. The horticultural skill of the country, developed by centuries of experience and lavish expense, has been taxed to the utmost to produce the labyrinths of shade, the brilliancy of color and the clouds of perfume which all Orientals love. Thick plantations and shrubberies are combined with gorgeous designs, composed of bright-colored flowers, which, we may believe, Oriental taste has made more beautiful than those we commonly see in western countries; and a large use is also made of small plants in pots. An idea of the magnitude of the garden and the expense of maintaining it may be gathered from the statement that it contains six million potted plants, each of which is watered every day. A natural arrangement seems to have been adopted for the most part, as a recent writer in *Harper's Magazine* speaks of "miniature lakes . . . laughing nooks, now a bit of jungle and now a broad and beautiful open space, where the distant view was enchanting."

The *Times-Democrat*, New Orleans, states, on the authority of our consul at San Salvador, that the fibre of the Banana is one of the valuable products of the soil which is now largely suffered to go to waste. This fibre, which may be divided into threads of silken fineness, extends the length of the body of the tree, which grows without a branch from ten to fifteen feet high, and has a circumference at the base of two and a half to three feet. In Central America, the fibre, with no preparation except drying, is used for shoe strings, lariats and cords for all purposes. In its twelve months of existence, the Banana trees bear only one bunch of fruit, but from two to four or ten trees spring from the roots of the one that has fallen. At home the bunch of Bananas is worth fifteen cents, and the dead tree nothing, though, if the supply were not inexhaustible, the latter would be worth ten times the value of the fruit to a cordage factory, paper-mill or coffee-sack maker. The Banana leaf, with stems of the toughest and finest threads, is from two and a half to three feet wide, and ten to fifteen feet long, and serves the native women of San Salvador as an umbrella in the rainy season, a carpet on which to sit, and a bed on which to rest.

Bulletin No. 39, from the Department of Entomology of Michigan Agricultural College, contains an admirable account of the summer's experiments with insecticides. It has been demonstrated that it pays to spray Apple-trees with London purple to protect the fruit from the codling moth. The spraying should begin as soon as the blossoms have fallen. If the poison is applied earlier it endangers bees and other insects which help to distribute the pollen, and it may do harm to the honey. One application is enough unless a heavy rain follows, when it is well to spray a second time. One pound of the purple to 100 gallons of water is strong enough mixture, and the second application should be weaker. Several good pumps and spraying nozzles are described. It is found that the same poison applied two or three times is of advantage against the curculio. There is a probability that lime-water will accomplish the same result, as has been explained in this journal. If so, this will be preferable to the arsenites, as it does no damage to the leaves, and it is better to avoid the use of poisons when we can. It has been found that air-slacked lime, to which has been added some crude carbolic acid, will repel the attacks of curculio. Professor Cook substituted plaster for lime, and found it more convenient, as it did not fly so badly as the lighter lime. He used one pint of the crude acid to 100 pounds of plaster, and with this both Cherry and Plum trees were dusted from a tall step-ladder. The mixture should be applied just as the calyx is falling from the fruit, or just as the curculio begins to lay its eggs. The Plums and Cherries on the trees thus treated were practically free from worms, and the application did no harm to the trees. The same remedy would probably prove successful against the curculio on Pears and Apples, but it would hardly prevail against the codling moth.

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Do Not Spare the Axe.

WE have often alluded, in these columns, to the importance of thinning plantations, and more than once called attention to the causes which prevent people, especially those who profess a deep and sincere fondness for trees, from cutting them, when cutting is essential, if the beauty and health of other and more important trees are to be preserved. It is not easy, indeed it is practically impossible, to lay down rules which should govern the thinning of plantations made and maintained for ornament. Thinning is an operation requiring judgment, and judgment in such matters can only come with long experience, and a real knowledge of trees, their characters and requirements. Each case, where it is a question of removing a tree from an ornamental plantation, must be studied on its individual merits, and no rule can be formulated to cover a number of cases. We speak now merely of trees with reference to their effect upon other trees, and not of trees as forming a part or parts of a landscape. The cutting of trees for the purpose of improving a landscape effect or for purposes of mere convenience, as where a tree casts too dense a shade over a dwelling house or other building, presents different problems, which we shall not undertake to consider at this time. What we want to insist upon is, that it is impossible to have fine trees unless light and air and space are provided for them, and that the right amount of these can only be determined by persons familiar with trees and their requirements from the hour of planting. If a number of trees are huddled together no one of them can ever develop into a handsome and symmetrical specimen, and not only are those trees which have been allowed to grow in youth with sufficient space about them the most beautiful, but such trees are the most vigorous in old age and the longest lived. Some trees require more space than others for their best development from an ornamental point of view. Some are most beautiful when they stand entirely alone as isolated specimens; there are others which grow together into harmonious masses of foliage. A Beech is a far more beautiful object when its lower branches sweep the ground, than when it exposes a tall, bare trunk, the result of overcrowding and insufficient light. A White Oak standing alone upon a lawn is val-

uable in proportion as it has retained its lower branches, and as these rest upon the turf, while the naked trunk of a White Oak in the midst of a large plantation is one of the most beautiful objects which our forests afford. A single White Pine or a group of these trees, without lower branches and with tall and naked shafts, are handsome and natural objects anywhere, while the moment the lower branches of a Spruce or a Fir perish, the beauty of these trees, as ornaments for the lawn, is destroyed forever. No one, therefore, will be able to thin a plantation with real success unless he is familiar with the appearance of the trees with which he is to deal at all stages of their growth and has a clear idea of the effects they are intended to produce as they approach maturity.

There are other cases where cutting down trees requires neither profound knowledge or great judgment, as when a really fine tree—or what might in time, with a little care, develop into a really fine tree—is ruined by the too close proximity of a neighbor possessing neither beauty nor value. How frequent such cases are, any one who looks at trees with the least critical eyes must see. Certainly there are few fine specimen trees to be seen in this country in comparison with the immense number which have been planted during the last fifty years. This is due to the fact that people are unwilling to use the axe. Either they refrain from cutting altogether, or they delay cutting so long, that the damage is done, and the tree which ought to have grown into a noble, widespreading specimen, is left stunted and misshapen. Examples of this neglect of the requirements essential to the growth of a fine tree can be seen on every hand. It is not necessary to look beyond the parks and squares of this city to find abundant evidences that the axe is not often used freely or judiciously. Of the thousands of trees planted on our public grounds, but few have been granted the opportunity for free development, and but few have attained the dignity of stature and expression which they might have reached. The popular clamor is against cutting down a single tree, and year after year starved and often half-dead specimens, destitute themselves of all beauty, present or prospective, are allowed to encroach more and more upon others, which only need a little space and a little light to become objects of the highest civic pride to future generations of New Yorkers.

The lesson which every man who controls trees, whether they be few or many, great or small, should learn, is that whenever he sees a really beautiful, well developed and symmetrical tree, its perfection is due to the fact that it has had, either by accident or by design, sufficient room in which to grow and develop its beauty. This lesson cannot be repeated too often, and until its force is fully appreciated, and until a tree out of place is considered a weed, and destroyed as promptly as other weeds should be destroyed, fine trees will continue to be as rare as they are at present. That they are rare, any of our readers who will examine with critical eyes at this season of the year, when the leaves have fallen, or are falling, their own trees or those which grow upon any public highway or pleasure ground in their neighborhood, will be able to see for themselves. This is the season of the year to study trees with the view of removing all those which are injuring their more valuable neighbors.

Piazas.

NOTHING is more characteristic of American country houses, as contrasted with those of other northern lands, than their large covered piazas. These have been developed in answer to as distinct and imperative a national need as ever determined the genesis of an architectural feature. Our early colonial ancestors did without piazas, for their habits of living and their architectural schemes were alike imported from England and Holland, and amid a strenuous people occupied with sterner problems than how to live most agreeably, it was naturally some time before that gradual modification of habits

which is inevitably brought about at last by new climatic influences, could express itself in architectural language. No colonial house had anything that resembled a piazza. If we find one attached to such a house to-day, it is an addition of later date—as is the case with the well-known Longfellow house in Cambridge.

But the introduction of the classic fashion in architecture meant the erection of porticoes, and the addition which they made to comfort has never again been dispensed with. When classic forms were abandoned in favor of what has been dubbed our "vernacular" style of architecture—when little temples gave way to plain, square, box-like houses with gabled roofs—the portico vanished, but its place was taken by a modification of the veranda which had long been in use in all southern lands. We speak of the course of things in our Northern States; at the South, where Spanish influence was felt, verandas and balconies seem to have been used from the earliest times.

When we say a "vernacular" style of architecture, we mean one which has been the unaffected outcome of universal needs and desires; and, therefore, whatever its defects from an artistic point of view, must have a large measure of practical fitness to recommend it. Many factors of such a style must persevere if progress in art is to mean more beauty and more fitness too; and, in fact, widely as we have departed from the plain, box-like house in recent years, our best new country houses are, in many respects, developed from them, and most notably so as regards the constant presence of the piazza. Considerations of sentiment and art excuse and make good its absence to the owner of an old colonial house; but when a new house is desired it is a clearly recognized necessity, even though some colonial scheme may be closely followed in other respects. Only in very rare cases do we see piazzas dispensed with by an owner who cares more for the odd pleasure of copying with exactness an inappropriate foreign model than for building himself a really comfortable home.

Certainly no really comfortable country home can exist in our land without a piazza. Even on our most northerly borders the heat of our summer atmosphere and the strength of our sunshine make exercise in the open air, to the extent to which it is practiced in England, for example, a sheer impossibility. Nor, for similar reasons, can we sit with comfort on the lawns of England or the uncovered terraces of France, or in the arbors, placed at some distance from the house, which are so characteristic of German villas. We must have a wide and open yet covered space, closely connected with our living rooms, where we can pass our hours of rest and many of our hours of occupation too. How necessary it is we read in the fact that, when well arranged, the piazza always becomes the very focus of domestic life and social intercourse—as central a feature in summer as the parlor fire-side is in winter.

But it is hardly needful to-day to affirm that an American country house without a piazza in it is in every sense a mistake and a failure—that it palpably lacks fitness and therefore must lack true beauty in the eyes of intelligent observers. It is more needful to protest against the excessive use of piazzas than to urge their erection. When their value was first fully appreciated it was believed that they could not be too freely used. A house of any importance most frequently had three if not all of its sides encircled by them, and their breadth was often as excessive as their length. To-day a reaction has begun to set in, and most fortunately. Piazzas on all sides of a house mean that all the rooms are darkened and that direct sunshine can nowhere enter the lower floor. This consideration is important even when a house is meant merely for summer use; and it is all-important when winter as well as summer comfort must be secured. Again, experience will always show that with very extensive piazzas only certain portions are commonly used, and that other por-

tions might be removed and never missed. And, finally, as one of the most difficult of current architectural problems is so to treat the piazza that it will seem an integral part of the house instead of a mere attached shed, it will be understood that the larger it is, the harder becomes the task. If we look at our best recent houses, we find that the main piazza is confined to one side, or, placed on a corner, partly encircles two sides; and there can be few cases in which more than this is needful.

But for this to suffice the piazza must not be considered as a mere adjunct to an interior which may be planned without regard to it. Success in its arrangement will depend upon choice of exposure and outlook, but also upon the way in which it is connected with the interior. If a piazza does not command the best view or has not sufficient light, or, on the other hand, admits the sun too freely, it will be a perpetual exasperation to its owner; while if it is not easily accessible from the most commonly frequented rooms, it will not fulfill its whole purpose. And, again, a want of thought in placing it may needlessly injure the rooms, excluding light and sun where they are most to be desired. In short, the piazza must be considered from the very outset as an integral portion of the house, and at every step in the planning a careful compromise must be made between its claims and those of the interior. Of course no general rules for its arrangement can be laid down. In some cases there may be but one possible position in which a piazza can exist; in others the advantages of a certain exposure or a particularly charming point of view may be of determining weight; while in others again there will be a much wider latitude for choice. The only rule is to consider all claims together from the very beginning, and to know clearly which ones, by reason of the habits and tastes of the owners, ought to be most fully met, if compromise of any conspicuous kind is necessary. Naturally the claims of the piazza should have more weight when a house is meant only for summer use, than when it will be lived in all the year round.

Entrance to the Temples at Nikko, Japan.

THE illustration on page 439, drawn from a photograph, shows the first or outer gate leading to the memorial temples at Nikko. They were erected in honor of Eyeyasu, the founder of that Tokugawa dynasty, which is more commonly called the dynasty of the "Tykoons," and contain his tomb.

The avenue which leads from Utzunomia to Nikko—a distance of twenty miles—is lined on either side by a double row of tall and stately *Cryptomerias*. Their branches, joining overhead, form a compact arch over the whole distance, and they have stood for 300 years—since the temples were erected by Eyemitz, the grandson of Eyeyasu. At the end of this avenue, as our picture shows, rises a low terrace, upon which more of the great Conifers stand, forming a superb frame, with their great, furrowed, stately trunks and masses of dark green foliage, for the low but richly colored buildings. The simplicity of the terrace—its steps and balustrade, seems excessive, perhaps, to western taste, in view of the rich adornment of the area to which they admit. But it is a good expression of the belief which to a Japanese is one of the first canons of good taste—that simpler things should lead up to more elaborate ones, and that the place where display should not be made is that which is most conspicuously presented to the public eye. From this standpoint the design of the terrace is excellent, and the great stone lanterns at either side of the steps give just the needed decorative accent.

The temples at Nikko are considered the finest in Japan and their site is famous for its natural charms. "He who has not seen Nikko," says a popular aphorism, "does not know how to use the word beautiful."

The Pines in October.

IT is past the middle of October, and several light frosts have cut the more tender herbage, but we still find a good many charming flowers and plants. The Asters and some of the Golden-rods are beautiful now, but the greatest number were in the height of their beauty in September. The New England Aster is still beautiful, and its flowers are more brightly colored in the Pines than in most other localities. Occasionally we meet groups with great masses of rose-colored corymbs, and others of deep violet and purple. This fine Aster takes kindly to cultivation, and graces our garden with its bloom long after Dahlias and other fall flowers are blackened with frost. These garden clumps are from seven to eight feet in height, with many-branched stems, each stem and branch terminated with a dense corymb of bloom. The stems are sufficiently strong to stand erect without stakes. The brilliancy and sweetness of the flowers attract hosts of butterflies, among them the beautiful Painted Lady (*Pyra-meis cardui*) and the Red Admiral (*P. Atalanta*).

The Silky Aster (*A. concolor*) is another handsome species, which grows in the more dry barrens. It has slender, wand-like stems from two to three feet in height, which sway gracefully among the grasses, displaying its showy raceme of flowers. The rays are violet-purple, and very numerous, and the stems are crowded with grayish silky leaves. *A. spectabilis* is just now in its prime, and is one of our handsomest Asters. It is a low-growing plant, not more than two feet high, and, when planted about a group of New England Asters, its deep blue rays make a striking picture. Another pretty, low-growing species is *A. nemoralis*. This grows in the damp barrens, and has lilac-purple rays and numerous small leaves with revolute margins. Many other species grow here which are worthy of notice and cultivation.

The Golden-rods have been unusually fine this autumn, and some are still in bloom. One of the most beautiful is *Solidago sempervirens*, with smooth, fleshy leaves and spreading panicles of deep golden blossoms. Its habitat is the salt marshes, but it grows here—some twenty-five miles inland—in many places. No doubt the seed has been brought in salt hay, which is fed to stock and often used for mulching. *S. elliptica* is another beautiful species growing in the damp barrens, now brilliant with bloom. The leaves are smooth and shining, and the flowers are in dense, spreading racemes. Numerous other species grace the roadsides and neglected fields, here as elsewhere, making the "closing out" the most splendid display of the year.

The large Bur-Marigold (*Bidens chrysanthemoides*) is still in bloom among the Sedges in the wet barrens. It is showy and handsome, the deep golden-yellow rays being an inch or more in length. Near by, the pretty Ladies' Tresses (*Spiranthes cernua*) are scattered among the grasses. This little Orchid has pure white, waxy flowers spirally twisted around the stem, and deliciously fragrant. *S. graminea* and *S. gracilis* are also here, each with their several varieties. The species seem to run together, and are a puzzling group to the botanist. Possibly this mixing is due to the work of insects which visit the flowers, and carry the pollen masses to other plants, fertilizing one species with another.

The False Rocket (*Cleome pungens*) is established among our native plants. A stout, much-branched specimen, with long spikes of handsome purple flowers, was growing where white sand had drifted around it. It was much more vigorous than some others found in damp soil. The leaves and stems had lost none of their mephitic odor in this poor soil, and therefore it was not a desirable addition to our wild bouquet. The Swamp Maples and Sour Gum or Tupelo, and the Liquidambar, or Sweet Gum, together with the lower-growing trees and shrubs, have a brilliancy of color which cannot be excelled in any part of our country; but, unfortunately, we lack the roll of hill and

valley, the foundation of cliff and mountain-side for the proper display of this grand picture.

Many trees and shrubs are now beautiful with their ripening fruits. The dark foliage of the Hollies is in fine contrast with its scarlet fruit. The Black Alder (*Ilex verticillata*) is conspicuous with its deep red, clustered fruit, and the fragrant Wax Myrtle (*Myrica cerifera*) is full of its grayish, waxy berries. Inkberry and Sumach, Ampelopsis and Smilax, all help, with fruits of varied form and color, the beauty of the dying leaves, and make our woods and fields more beautiful, if possible, in October, than they have been at any other season of the year.

Vineland, N. J.

Mary Treat.

Foreign Correspondence.

London Letter.

TO-DAY'S meeting of the Royal Horticultural Society was in strong contrast to that a fortnight ago, when the hall glowed with the colors of a thousand Dahlias. The hall was very dull, a sharp frost a week ago having promptly put an end to the Dahlia season once more. The reign of the Dahlia continued but three weeks this year, and if all our seasons were so cold, sunless and rainy as the present we should abandon the cultivation of this flower altogether. The great feature of the meeting to-day was a marvelous exhibition of Ferns, chiefly stove and green-house kinds, sent by Mr. H. B. May, of Edmonton, one of the chief Fern-growers for Covent Garden market. The collection numbered hundreds of plants, representing the very finest Ferns in cultivation, and included not only such kinds as are grown specially for market, but a host of others, many of them rare, that could not be seen elsewhere than in the largest collections. Mr. May has for years devoted himself specially to these plants, and has succeeded in raising many varieties of the highest excellence, among them being such beautiful kinds as *Adiantum Reginae*, *Pteris Crelica Mayi*, *P. serrulata cristata compacta*, *P. tremula flaccida*, *P. tremula elegans*, *P. tremula grandiceps*, all of which he grows largely for market, and which, no doubt, are known now in American gardens. The five named first have received the highest awards of merit from the Society. Passing over a crowd of species and varieties that would be uninteresting to the general cultivator, I was anxious to know the kinds Mr. May grows most extensively for Covent Garden, and as these may be useful to some readers, I append the list. For cutting—that is, for cut fronds gathered in convenient sized bunches—the following are most largely used: *Adiantum cuneatum*, the common Maidenhair Fern grown by thousands; *A. Williamsi*, with the fronds powdered with gold; *A. elegans*, a form of *A. cuneatum*, with longer and larger fronds and smaller pinnæ. The list of the kinds grown for sale in pots includes, besides the foregoing, *A. scutum*; *A. Reginae*, very dwarf, with young fronds coppery red; *Pteris Crelica albo-lineata*, *P. Crelica Mayi*, *P. serrulata major*, a robust growing variety; *P. serrulata cristata compacta*; *P. argyrea*, with silvery marked fronds. *P. tremula*, and its several varieties, all favorites in the market; *Cyrtomium falcatum*, capital as a room Fern, as it withstands dust so well; *Phlebodium aureum*, *Lomaria gibba* (when small), *Doryopteris palmata*, *Onychium Japonicum* (also for cutting) and *Asplenium bulbiferum* (and its varieties), which is the most useful of all the Aspleniums for market. These comprise most of the kinds grown specially for Covent Garden, and this list has been compiled from years of experience, and is rarely added to, as few new Ferns possess the requisite qualities for market, which, first of all, must be elegant, then robust and easily and quickly grown into plants of salable size, and, moreover, must be easily propagated. They must also "carry" well—that is, they must not be liable to injury from rough usage in getting them to the market and by the treatment they receive there.

Among the few plants and flowers which won first-class certificates was one Orchid, the beautiful little *Cattleya porphyrites*, supposed to be a natural hybrid, but between which species I cannot say. It is a small grower, with slender pseudo-bulbs from six to eight inches high, carrying a pair of leaves. The flowers are about four inches across, with rather narrow, purplish rose sepals and a beautifully formed lip with rounded lobe of an intense maroon crimson. It is an exquisite little Orchid, and Baron Schroeder, who exhibited it, prizes it highly. Messrs. Veitch, of Chelsea, showed, in their choice group, a new hybrid Pitcher Plant named *Nepenthes Dicksoniana*, in honor of the late Professor Dickson, of the Edinburgh Botanic Garden. It is a cross between *N. Veitchii*, which has large, handsomely-shaped pitchers with broad grooved rims, and, in color, a pale green, and *N. Rafflesiana*, the well-known species, with its large pitchers boldly blotched with blood-red on a green ground. The hybrid partakes of the characters of both parents, but is handsomer in shape than either, as large as *N. Veitchii*, and more beautifully marked than any form of *N. Rafflesiana*. It is, moreover, a very strong grower, as most hybrid *Nepenthes* are, and forms pitchers freely, which is a great recommendation. A new Maidenhair Fern named *Adiantum Waltoni diffusum*, was worthily certificated, as it is a most elegant Fern and a robust grower. The original *A. Waltoni* reminds one of a tall growing form of *A. cuneatum*, with small, deeply cut pinnæ. The variety *Diffusum* differs in its larger fronds and more spreading habit. Both this and the type originated with Mr. Walton.

An early Chrysanthemum named Elsie was exhibited by the well-known grower, Mr. Stevens, of Putney. It is a large flower with narrow, reflexed florets, very full and of a delicate straw color (some call it primrose), just such a tint as every one admires. The certificate was voted unanimously, a good criterion of its merit. Another new Canna, so bold and handsome in foliage, so brilliant in flower, that it quite captivated many of the committee, also won a certificate, but it was not so fine as some that Messrs. Cannell have shown previously. Its name is Ulrich Brunner, and it has brilliant scarlet flowers with green foliage. It was shown by Messrs. Veitch. A group of double flowered Begonias from Messrs. Cannell was next passed upon, and two were singled out as worthy of certificates. One was Mrs. Stuart, with flowers of a rich, clear yellow; the other General Chubet, of a beautiful rose cherry. Both have a dwarf, sturdy growth, the blossoms being of enormous size, very double, and resembling double Hollyhocks more than Begonias.

The other exhibits worthy of notice included a new Rose all the way from Elsinore, in Denmark. The blooms were much damaged, and several were of the opinion that the variety was identical with La France; but as the blooms came through Mr. W. Paul, of Waltham Cross, who, of course, knows Roses as well as any one, the committee reserved their opinion until they see good blooms early in the season next year. It was named Hybrid Perpetual Denmark. Messrs. Veitch had in their group some noteworthy plants, such as a basketful of admirably grown and flowered specimens of *Bouvardia President Cleveland*, which is considered to be the finest of all the scarlet *Bouvardias*. Its color is very brilliant, and the flowers and trusses are both large. The same firm also showed *Amasonia calycina* (*A. punicea*), a new stove plant with scarlet bracts, and long, pale yellow flowers that are produced in continuous succession for several weeks in autumn and winter; *Amaryllis Autumn Beauty*, a hybrid from *A. reticulata*, with large, pink flowers always produced in autumn when no other *Amaryllis* is in bloom, and *Begonia John Heal*, a charming little winter flowering *Begonia*, obtained by crossing *B. Socotrana* and *B. insignis*. It produces an abundance of rosy carmine flowers, which, in contrast to the large, pale green foliage, is very beautiful. It is justly looked upon as a first-rate winter flowering plant.

Baron Schroeder's gardener, Mr. Ballantine, showed cut blooms of two choice Orchids, *Laelia Dominicana* and *Laelia Novelty*. The first is a cross between *Cattleya Dowiana* and *C. Exoniensis*, and it is strange that this mingling of two *Cattleyas* should make the hybrid a *Laelia*, but so it is. It has the large, bold flowers of *C. Dowiana*, lilac-rose sepals, and a broad lip of the richest crimson purple, not a trace of the characteristic golden tint of *C. Dowiana* being present. This is one of the rarest of all hybrid Orchids, and very few plants of it are in existence. *C. Novelty* is a hybrid between *Cattleya marginata* and *L. elegans*. It is a good deal like *C. porphyrites*, but the tube of the lip is pure white, which is a strong contrast to the crimson lobe. Some plants of *Adiantum Farleyense*, said to have been raised from spores, were shown by Mr. Goldby, of Brierfield, who states that he sowed the spores on February 23d last year, and the sporlings appeared soon after. If this statement is correct, it tends to disprove the theory that this beautiful Maidenhair Fern is a hybrid, and never produces fertile spores.

London, October 9th.

W. Goldring.

New or Little Known Plants.

A White-Flowered *Cattleya Gigas*.

THIS very interesting novelty, of which an illustration of the only plant now known appears upon page 437 of the present issue, was collected by Mr. Francisco Timanotiny for Messrs. Siebrecht & Wadley, in Medellin, United States of Colombia, during the autumn of 1885, and has been successfully flowered by them during the past summer in their Orchid establishment at New Rochelle, near this city. The sepals and petals of the flower are pure white, while the large, full lip is white, delicately shaded with rose, but preserving the two faint yellow eyes characteristic of the species, from which this variety does not otherwise differ.

The plant has been added to Mr. F. L. Ames' rich collection of Orchids, where it is now making a vigorous and satisfactory growth.

Cultural Department.

The Propagation of Conifers.

MANY propagators of Conifers put in cuttings and do their grafting between early August and October, but while some succeed, many more fail. My experience is that the very changeable weather of our late summer and early autumn renders this work most difficult then, because greater attention is needed to keep the degree of temperature and moisture uniform than it is later in the season. Many Conifers, it is true, will root at any season, but it is nearly impossible to persuade others to root during the hot weather. In the winter season the plants seem to have stored up all the material ready for use in making a new growth, so that they are in better condition to form callus and roots than at any other time. There is also less evaporation under glass in winter than there is in hot weather, and by artificial means we can control the conditions of heat and moisture more easily. In fact, the more steady the cold weather in winter, the better is the chance of success in propagating hard-wood plants.

A green-house is essential for the propagation of evergreens in winter as far north as Boston. The cuttings can be put in an ordinary propagating bed, in pots or in boxes. For large lots, I prefer shallow boxes, and for smaller quantities pots are chosen, since they can be more conveniently removed without disturbing the roots. In any case, good drainage must be secured with potsherds or coarse gravel covered with moss or peat to keep the sand from sifting through. The cuttings should be collected, if possible, on mild days, and when not frozen. If not used at once, they can be kept in damp moss, in a cool place, for a week or more without injury. If the cuttings must be gathered in freezing weather they should be buried in damp moss for several hours before they are used. The cutting should be made with a heel, using a sharp knife, and it should be from two to four inches long in most Evergreens. As soon as made, the cut-

tings should be put in so closely as to touch each other, and a good watering should be given to settle the sand well around them. They should then be placed on benches in a cool house, where the temperature does not rise above 45° at night, or ten to fifteen degrees higher during the day. In sunny weather a slight syringing once or twice a day will be needful, and they should be shaded if necessary. They should be kept at this low temperature for one or two months, or until well calloused, when the temperature can be increased by 10°, and if a slight bottom heat can then be given it will hasten the rooting. About the middle of April they will, in most cases, be well rooted, and as soon as the weather is settled they can be hardened off in frames with a slight protection, and if planted out in frames by the middle of May, they will be established by autumn, and will need no protection until the ground begins to freeze. Choice varieties, as soon as they are rooted, should be transplanted into boxes of

Sciadopitys also roots well, though slowly. All varieties of the Box can be treated in the same way as Conifers. *Ilex glabra* and *I. Aquifolium* root well from cuttings of the current year's growth, and the former can be put in at any time from November till February; but *I. opaca* should be put in early in November and kept in a close frame until well calloused, which requires from two to three months. Cuttings should be taken from a fruiting plant if the berries are an object, and the same can be said of all plants of the Holly family.

While most Conifers, except Pines, can be propagated reasonably well from cuttings, stronger plants can be obtained by grafting, but many gardeners who do not hesitate to graft the most tender plants seem afraid to make the trial with Conifers. With few exceptions they are easier to graft than many hard-wood plants, although more time is required to complete the union. In grafting, the first consideration is the proper selection and preparation of stocks. These should



Fig. 69.—A White-flowered *Cattleya Gigas*.—See page 436

light soil, and grown during the summer under glass. They should be wintered in cold pits, and transplanted into beds the following spring. Among the Conifers I have successfully treated in this way are *Thuja occidentalis* and its varieties, *Chamaecyparis (Retinospora) obtusa*, *C. pisifera*, *C. plumosa* and its varieties. Such Junipers as the Irish, Swedish, Douglas' Golden and other varieties of common Juniper, *J. Japonica* and some varieties of *J. Virginiana*; *Picea nigra humila*, *P. excelsa Gregoriana*, *P. pungens*, *P. Omorika* and *Abies concolor*.

I find the best time to put in cuttings of most evergreens is from the middle of November to the middle of January. I have tried several hundred cuttings of *Picea pungens*, giving them every possible care, and yet lost all but two in a hundred of them, while of those put in in January I have saved fully one-half. In taking cuttings of *Picea* I find the smallest wood the best. I have not been successful in propagating varieties of the common Hemlock from cuttings, although cuttings of Japanese Hemlock (*Tsuga Sieboldii*) root well. The Ginkgo roots readily from hard or soft cuttings.

be potted, if possible, in spring, and plunged in a sheltered situation where they can be watered during the summer; and at the approach of freezing weather, they should be put in a cool cellar or pit where they can be kept until needed. They should be taken into the house two or three weeks before the time of grafting, so that the sap may be well started. Where the stocks have not been prepared in spring they can be potted in October or November and put in a cool green-house, where they should be syringed daily in fine weather and kept in a temperature of not less than 50° at night, with a little bottom heat, if possible. As soon as the new roots reach the side of the pots the grafting may begin.

But besides having the stocks in good condition, it is a matter of importance to know what kinds to select for the different species and varieties. For all Firs, seedlings of *Abies pectinata* or *A. balsamea* make the best stocks. For the Spruces, the Norway is the best and most easily obtained, although the White Spruce makes good stocks. It is, however, more difficult to procure. The common Hemlock

is the best stock for *Tsuga Sieboldii* and for varieties of *T. Canadensis*. For the Retinosporas, Lawson's Cypress and other species of *Chamaecyparis*, together with *Libocedrus decurrens*, the common Arbor Vitæ, and the White Swamp Cedar, make good stocks, but plants of this class do better on stocks of the common form of *Chamaecyparis pisifera*. This last roots readily from cuttings and makes good stock in two years. The common Red Cedar is the proper stock for all species and varieties of the Juniper except *J. occidentalis*. I find no better stocks than White Pine for all Pines of the five-leaved section, while for the two-leaved Pines, the Scotch Pine is generally used, although the Red Pine would be better if it could be easily procured. Some three-leaved Pines, like *P. rigida*, *P. Taeda* and *P. ponderosa*, do quite as well, so far as I have observed, on this same stock. Varieties of the common and Japanese Yews graft well on seedlings of the common Yew. Thuyas do well when grafted on stock of common Arbor Vitæ. The Western Larch, the Japanese Larch and varieties of the European Larch graft readily on this species, but I have not been successful with *Pseudolarix Kämpferi* on the same stock, nor on *Larix leptolepis*. Sometimes it will make good growths for a year, but, with me, it gradually dies out.

I usually begin to graft Conifers late in December, and can graft with success, if need be, until the first of March. After that time they are more difficult to manage. The very best results are secured from December to February. The mode of grafting depends much upon the time of year and other conditions, but I have found the simplest method the best, although other ways may be tried for experiment's sake. The side or veneer method is most easily learned, and has this advantage over cleft grafting—namely, that if the graft does not take at the first operation, the stock is not destroyed for the season, but the operation can be repeated on another side or a little lower down. In making this graft a smooth place should be selected on the stock, and a slight downward cut should be made with a thin-bladed knife a few inches from the base of the plant, cutting entirely through the bark, but, if possible, not into the wood. Then the blade is inserted two or three inches above, cutting a thin slice off the bark down to the cross cut below. A similar slice is cut from the scion and the end of the scion is cut with a slight angle on the opposite side to fit into the lip of the stock. The two are then closed together, care being taken that the cambium layers come in contact with each other. They should then be bound firmly with strands of bass ruffa, or other soft tying material. The grafted plants are then laid on their sides in a close frame which has been previously prepared by putting in a few inches of sand or moss. No wax is needed at this season. For the first few weeks the frames must be kept close, and the plants need a slight daily syringing in fine weather. When they show signs of knitting together, which will be usually in two or three weeks, a little air may be given, and after the house is closed, the sashes may be raised for several hours, and finally air may be given them all night. The grafts will need looking over occasionally to see that no ties are cutting through the stock or scion. If they are, loosen and retie. Union will be effected easily in from five to eight weeks, although in some species a longer time is needed. As soon as the grafts are established they should be taken from the frames; and the tops of the stocks should be shortened. They should be set on benches in the green-house and treated as other plants. Do not cut the stock back closely until the following spring; this is especially necessary in the case of Pines and Spruces; many plants are lost by heading back too early. As soon as the weather is settled in May, the plants can be taken from the green-house and plunged in beds. If the roots are matted they should be carefully separated and spread out, for when once the roots of Conifers are pot-bound, unless they are separated, they will continue growing in a contracted way, and many valuable trees have been lost from this cause. When evergreens have been grafted and laid on their sides in damp sphagnum, and covered several inches, they require much less care, and a few moments' neglect will not be felt as it would otherwise. A few years ago, for experiment's sake, I grafted 100 stocks of *Picea pungens* and laid them on a side bench which was covered with six inches of sphagnum. I then covered the grafted plants about one-third of the way up. These were syringed lightly once or twice a day in sunny weather, and the temperature of the house was kept at about 50° at night, the moss being on a slate bench over the pipes which were kept at an even temperature of 65°. The result was ninety-two strong plants without the aid of a double frame. Some nurserymen seeing the experiment have tried the same with equal success.

I was first led to this method by accident. I had a corner filled with moss, and late one evening buried a few plants that had been grafted. Then I forgot them until I had occasion to remove the moss, and found that the plants had taken well. This led to further trial, which has proved of considerable value to me.

Arnold Arboretum.

Jackson Dawson.

The Vegetable Garden.

ALL tender crops, as Snap and Lima Beans, Egg Plants, Peppers and the like, have been destroyed by frost, and are now cleared away and the ground they occupied manured and dug. But many crops are not yet gathered, and it often is inconvenient to manure and dig a piece of ground lately occupied by a tender crop—like melons, for example—till the hardier crops, as Parsnips, growing in contiguous plats, are also removed. Asparagus tops have been cut, cleared away and burned, and we are now manuring and digging the ground. We plant our Asparagus deep enough to allow us to plow or dig over the crowns without touching them. The stumps of the stems which are left in the ground cannot now be removed, but in April and before Asparagus cutting begins they can be pulled out with the greatest ease. Were they left in the ground in spring they would be in the way of the knife used in cutting the crop for use. Asparagus can be planted now as well as in spring, on the level and only a few inches deep; but if planted in trenches eighteen inches deep, as the large market growers do, then planting had better be deferred till early spring.

It is now time to attend to the lifting, topping and storing for winter of the root crops. Pull up the Beets, and save the nice, well shaped, tender ones. Large, coarse, old roots are not worth saving for culinary use. In cutting off the leaves do not cut quite close to the bulb, else it will bleed, and never cut off the end or tap root. Lay them on the ground in heaps of one or a few barrells, and cover them with tops or straw enough to exclude frost, with a shutter over that to protect them from rain, and leave them here for a week or ten days to sweat. Then bring them into the pit, cellar or other winter quarters; do not store them for the winter in large bulk, else they will rot. In order to keep them plump and fresh pack them in open, narrow, well ventilated bins in the vegetable house, and use a good deal of ordinarily moist sandy soil thrown in among them. Treat Carrots in the same way, only the leaves can be cut close to the roots and they may be stored in large bulk if desired. Although Carrots keep fresher when packed in sand or earth, this is not at all necessary. Parsnips may be treated as Carrots. But as Parsnips lose much of their flavor when kept out of the earth, we pack them in sandy soil and in this way retain their good taste. Salsify, Scorzonera and Skirret should be treated like Beets. Do not crop them close. Treat Turnips in about the same way as Carrots. Much difficulty is often experienced in keeping Jerusalem Artichokes from rotting in winter, but with proper care they keep very well. The tubers mature slowly and should not be lifted till late in the season. Then store them on the ground in very small bulk, covering them with some straw and a little earth, or a shutter over the straw to keep the tubers dry. At the end of a week or two store them in the root-house in small bins and with plenty of earth or sand among them. Horseradish is another root that should now be lifted and stored in sand or earth. If not kept in this way it wilts and loses much of its pungency. In preparing it for storing, cut off the tops, also the thong roots, which are not large enough for culinary purposes, and save enough of these long, straight, fleshy roots for sets for next year. Instead of having sets two or three inches long, have them eight or ten inches long.

In lifting and storing root crops, be particular not to remove them at once into their winter quarters unless they are exceptionally congenial. Never store away roots that are wet or in any way decayed. See that the root-house is dry overhead and at the bottom, that it is moderately dark and well ventilated, and that it can be kept uniformly cool, say about 34° to 40°. Never store roots of any kind in large bulk.

Turnips, Carrots and Potatoes, of which we usually have the largest bulk, may be successfully wintered in out-door pits. We always store hundreds of barrels of Carrots in this way: the pits are five feet wide, six inches deep and of a length to contain the crop. The Carrots are heaped up three feet high along the middle. Some thatch is spread over the roots, then a coating, some eight to twelve inches thick, of earth, is placed over the straw. Drain tiles, as ventilators, rise from the roof of these pits every five feet.

It is not well to lift root crops, except Potatoes, before sharp frost occurs, and even then we should not cover them up

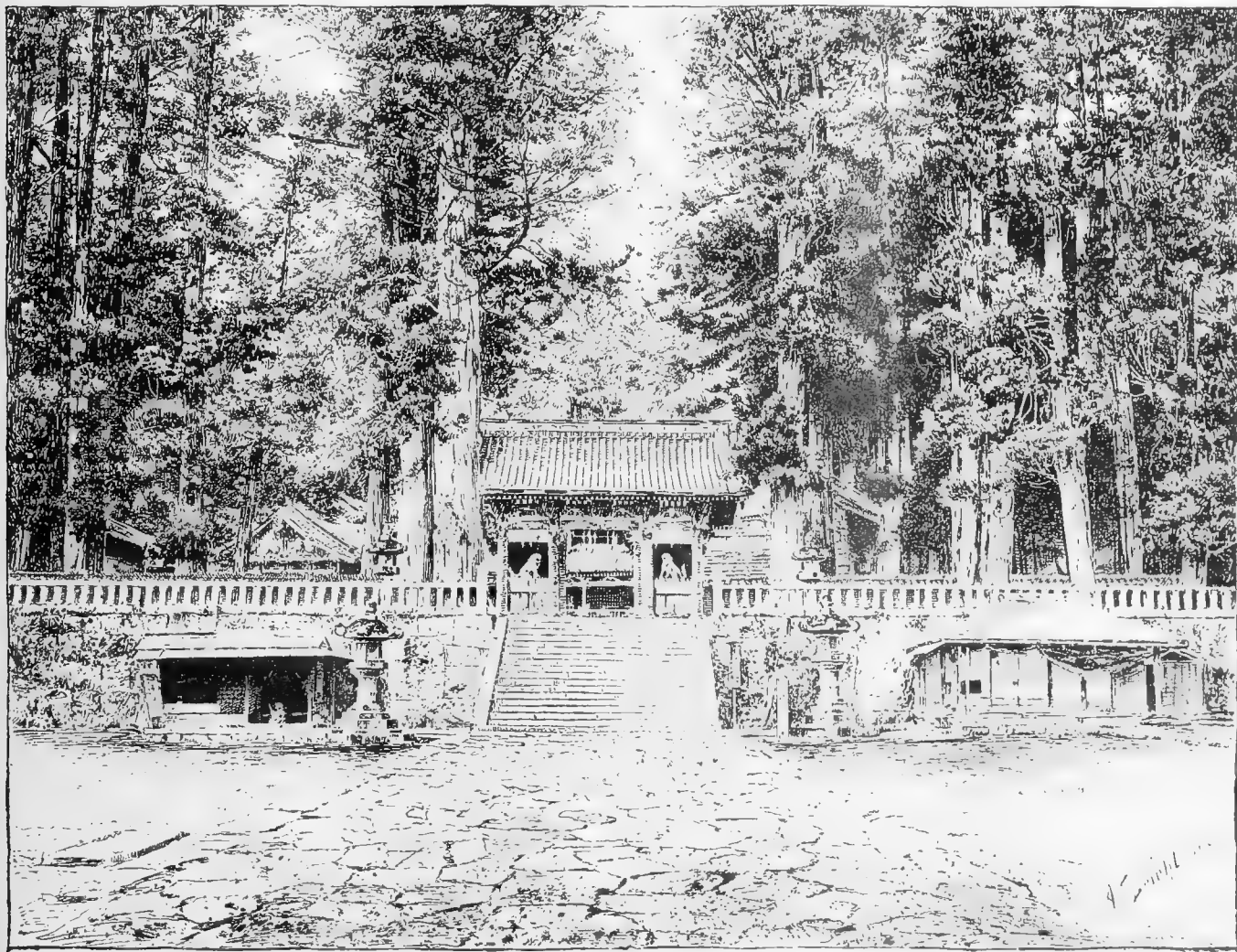
thickly till near the time when settled wintry weather sets in.

Many root crops—Parsnips, Salsify, Scorzonera, Artichokes and Horseradish, for example—are perfectly hardy with us, and keep better and retain their quality better when left in the ground and lifted and used as required. But this is impracticable. We may leave a part of each crop in the ground till early spring, if so desired, but as it is advisable to have the ground completely cleared of summer crops, manured and plowed or dug in fall, this work could not well be done if some of each kind of roots were left growing in the ground till spring.

Roots of Sea Kale, Dandelions, Sorrel and Chicory, for winter forcing, should be lifted now and stored in sand in the root house for use as desired. In topping them, we are careful never to cut into the crown, as it is the leaf and not the root that is used. As the winter advances we keep up a succession of these vegetables, planting the roots thickly in soap

should be avoided at all times during the winter, and especially with Papa Gontier and Niphetos. Both of these Roses are very susceptible to excessive watering, and will soon show its effects by an unhealthy appearance and the loss of a large portion of their foliage.

Another trouble the Rose-grower has to contend with at this season, or has to contend with to a greater extent at this season than during the summer months, is the disease known as "black spot," or "black mildew," an insidious and most persistent enemy to healthy Rose growth, and though well known in appearance, Rose-growers seem unable to entirely prevent its ravages, especially among the Hybrid Teas. Various modes of treatment have been adopted for the purpose of preventing or curing "black spot," and with various degrees of success, the most approved method at present being that of keeping the affected plants rather dry at the root, and at the same time giving them a slight increase in temperature. This



Entrance to the Temples at Nikko, Japan.—See page 434.

boxes placed in the Mushroom house or other quarters, where a temperature of 60° or over is maintained. And when they start to grow, in order to have the tops well bleached and tender, we invert other boxes over those in which the roots are growing.

William Falconer.

Glen Cove, N. Y.

Roses.—A close watch should be kept at this time of the year for the first appearance of red spider on the Roses, because, when taken in time, the spider may be exterminated before much injury has been done. Unless very carefully fired during the changeable weather of the autumn, the houses on some occasions may get too warm at night, and when this occurs the foliage of the Roses becomes weakened and an easy prey to the spider. Thorough syringing, with a good pressure of water, is the most effectual method of dealing with red spider, and by using a good head of water the stream can be used to much greater advantage on the foliage without giving an undue amount at the root, which latter condition

seems a reasonable treatment, from the fact that the spot almost invariably follows excessive watering, when the latter is coupled with a close, moist atmosphere. It is also well to remove the affected leaves as much as is possible without actually stripping the plants, as it is most likely that the growth of the fungus is encouraged and spread about by the decayed leaves falling on the ground. In fact, cleanliness will be found to pay in the Rose-house at all times of the year. This disease has given most trouble among the Hybrid Tea Roses, such as La France, Bennett, American Beauty, and others of similar character, and from the preference it has shown for this class of Roses, it would seem as if there was some special defect in their constitution, which laid them open to its attacks. Either this is true or else the prevalent mode of growing them is defective. Possibly the deciduous habit of the Hybrid Perpetuals may have something to do with the peculiarities of the Hybrid Teas, though the latter class is usually understood to do better when treated

as Teas, than when grown by the methods adapted to Hybrid Perpetuals.

Philadelphia, Pa.

W.

Schizostylis coccinea.—We are now enjoying the flowers of this beautiful South African plant. It belongs to the Iris family, and is commonly known as Crimson Flag or Kaffir Lily. It always blooms in fall, especially from October till December. During the winter months it requires the protection of a cool green-house or warm frame, but throughout the summer months out-door treatment. Rich, moist soil and a sheltered, slightly shaded place suits it best, and it may be grown in pots or planted out in summer, and lifted and potted in September. In order to have it in its greatest luxuriance, however, it should be planted out permanently in a frame from which frost is excluded at all times. The flowers are crimson, one and a half to two inches across, and closely arranged on spikes after the fashion of some Gladioli. Propagation is easily effected by means of division in spring or early summer.

Helianthus Maximiliani.—This is the finest hardy perennial Sunflower now in bloom. It grows from seven to ten feet high, and just now (in late October) its long, wand-like stems are terminated for two to three feet of their length with bright golden-yellow flowers closely set to the stems. The whole plant is rough-hispid; the leaves are alternate, scabrous, lanceolate, acute. The species is indigenous to the "Prairies and plains west of the Mississippi, and from the Saskatchewan to Texas." It spreads a good deal at the root, but not nearly to the extent that most other perennial species do. There is a current idea that it is not quite hardy, but we have never known it to show any signs of being tender. We find that growing it for several successive years in one place in the garden debilitates it, no matter how much manure we give it. It should be transplanted to fresh ground every second or third year if it is to continue at its best estate.

G. C.

Notes From the Arnold Arboretum.

A SEVERE and sudden frost in the middle of September, following six weeks in which the rainfall was almost without a parallel in amount in eastern New England, and during which the sun was rarely seen, destroyed the foliage on many plants, and has greatly impaired the beauty of many others, which, ordinarily, at this season of the year, are more beautiful than at any other. Fruits, too, have ripened badly, and many shrubs, native and foreign, are almost destitute of berries, which are often more attractive than the flowers preceding them. It is probable, moreover, that the damage inflicted by the unusual wetness of the season will not be fully felt until next year. Unripened wood, and the wood of comparatively few plants is thoroughly ripened, means that many plants will be killed back during the winter, and that those which bloom upon this year's growth, even if it is not killed, will not produce many flowers next spring and summer. Plants, therefore, of doubtful hardiness, should be protected this winter with unusual care; and even those which have shown themselves perfectly hardy for years will be all the better for a little protection during the cold weather, in view of the unusual climatic conditions of the past season. There are some plants in the collection, however, which are very beautiful now, and it is perhaps well to mention them, for if a plant assumes a brilliant autumn coloring this year, it may be depended upon to do so under the most unfavorable conditions.

The foliage of the common Barberry (*B. vulgaris*), of European origin, loses its leaves late, and after a very slight change of color. This plant, naturalized in North America, has not changed its character in this particular with its change of home, and in New England still lacks autumnal brilliancy of leaf. But the common Barberry is a plant of wide geographical distribution. There are growing in the Arboretum specimens of Manchurian and of Japanese origin. The former, which in some gardens is known as *B. Amurensis*, is now bright with orange and scarlet, while the Japanese plant is still more brilliant and more beautiful. The fruit of this last is smaller, and borne in shorter racemes than upon the European plants. For its foliage, if for no other reason, the Japanese Barberry should be better known in our gardens. Still more brilliant is the autumn coloring of *Berberis emarginata*, a Siberian plant, closely related to the common Barberry, and perhaps to be considered as a mere geographical variety of it. This is certainly one of the most desirable of shrubs, considered with reference to the autumnal coloring of the foliage. *Berberis Thunbergii* is very beautiful, however, at this season of the year, and the large and conspicuous fruit, solitary, or more rarely umbellate, remains unshriveled upon the branches

until the appearance of the new leaves in spring. The growing popularity of this plant is certainly well merited. *Berberis Chinensis*, the most graceful of all the Barberries in this collection, is still perfectly green. Later it will be clothed in brilliant hues. There is a difference, however, in the autumn coloring of different individuals of this group, the plants which originated in the mountains of northern China being the most valuable in this respect. The fruit of this species is unsurpassed in size and brilliancy of coloring and in the length of the long, graceful racemes, which now fairly weigh down the slender, pendulous branches. The pretty little Himalayan *Berberis concinna* has turned brilliantly, too, to orange and scarlet, and so has our only eastern American representative of the genus, *Berberis Canadensis*, a rather rare Alleghany plant.

Many of the North American *Ericaceæ* are now striking and beautiful objects. None are more beautiful than the common high-bush Blueberry, *Vaccinium corymbosum*, which, when well grown, is sometimes eight or ten feet high, and a stout, thick, wide spreading bush. It is impossible to describe the splendor of the scarlets with which, at this time, its leaves are tinged. They are fairly dazzling. This plant is beautiful when in flower; its fruit is handsome, abundant and of excellent quality, and among North American shrubs there is none more brilliant in late October. It is easily transplanted from its native swamps and hillsides to the garden, where it thrives in good soil and grows with more rapidity than most plants of its class. More than other Blueberries, too, it shows a tendency to vary in the size, shape and quality of its fruit. Any attempt to improve the Blueberry by selection, with the view of adding it to the list of cultivated fruits, should naturally begin with this species. Simply as an ornamental garden plant, it deserves a place in every garden, and it is surprising that gardeners have so long and so generally neglected it. Two Huckleberries, *Gaylussacia frondosa* and *G. dumosa*, are very brilliant just now, and, like all the *Vaccinia*, should find a place in gardens where attention is paid to planting for autumn effects of color. And very brilliant, too, is the Sourwood, *Oxydendrum arboreum*, which is hardly surpassed in color at this season of the year by any American tree. Here it is scarcely more than a tall bush, but in the forests, which cover the sides of the southern Alleghanies, it becomes a fair-sized tree, rivaling the Flowering Dogwood and the Tupelo in its scarlet leaves, the effect of which is increased by the long compound racemes of yellow fruit hanging from the extremities of all the branches. This tree is often planted and greatly esteemed in Europe, where it has been known for a century at least. Here it is little known by gardeners and rarely seen in gardens.

The leaves of *Rhododendron Vaseyi*, recently figured in this journal, have now turned to a deep, dark crimson, a character which will increase the value of this beautiful and interesting addition to our garden flora. The wood, in spite of the wet season, seems thoroughly ripened, and the plants are well set with flower buds.

Cornus florida has, as usual, turned to a deep, rich scarlet, and *Cornus sanguinea* is hardly less attractive, with its broad leaves now the so-called old gold color, with the margins of a deep scarlet. The habit of this plant is exceptionally good when it is given room for the free development of all its spreading branches; and the bright color of its bark makes it an agreeable object in winter after the leaves have fallen.

Viburnum acerifolium, one of the commonest of the native species in hilly and in northern regions, shows some pink in the prevailing scarlet of the autumn tints of its leaves, which are not surpassed in brilliancy by those of any other *Viburnum*. This plant has a neat and compact habit of growth and handsome black fruit, which make a pleasant contrast with the foliage. The foliage of *Viburnum pubescens*, which is another rather small growing native species, worthy of a place in every garden, turns to a deep and very rich dark purple, which is quite unlike that of any other shrub in the collection. It contrasts admirably with some of the species, like the last, with brighter foliage.

The Witch Hazel, the latest of all our shrubs to flower, is now in full bloom, the pretty yellow flowers being partly hidden by the ample leaves, which have turned to orange, and will fall before the petals. This autumn color of the leaves of this American plant does not appear in those of its Japanese congener (*Hamamelis Japonica*), which shrivel and fall while still green. *Fothergilla alnifolia* has brilliant golden leaves just now, while those of the Japanese *Photinia villosa*, figured in an early issue of this journal, are now of a brilliant scarlet. A better acquaintance only confirms the value of this plant for garden decoration.

Some plants are valuable because their foliage is able to resist frost, and to keep green and bright very late in the autumn. The common Barberry is a conspicuous example of this sort; others are *Akebia quinata*, a handsome Japanese climbing plant, related to the Barberries, and the well-known Japan Honeysuckle. The leaves of most of the Japanese plants in cultivation turn in the autumn to the same colors which their American congeners assume, but in the case of these two plants, both of which, in more temperate climates, retain their foliage until spring, the leaves remain green until killed by severe freezing; and this is true of nearly all European shrubs and of most European trees, *Acer platanoides*, the Norway Maple, being the only one of the common European trees which assumes here anything like brilliant autumn tints of color.

Few shrubs are in flower. Flowers may still be found, however, in considerable profusion upon *Daphne Cneorum*, a plant which remains in bloom almost continuously during the season. Few shrubs produce more attractive or more fragrant flowers, and were it only a little more hardy and a little less slow to propagate, this *Daphne* would be one of the most desirable of all low under-shrubs for the garden-border or for the rockery.

The Japanese Honeysuckle, or that variety which is very generally known in American gardens as *Lonicera Hallii*, is still sparingly covered with its deliciously fragrant white flowers, which turn yellow in fading, and which nothing but the most severe freezing ever entirely destroys.

The latest growths of the Texan *Clematis coccinea* are still covered with the bright and handsome scarlet, bell-shaped flowers, peculiar to this species—a remarkable fact in the case of a plant of such southern origin, which would hardly be expected to be hardy in the New England climate. The capacity to bloom late adds very considerably to the really great ornamental value of this pretty plant.

Flowers may be found still upon the Japanese Rose (*Rosa rugosa*), especially upon plants of the white-flowered variety; but this, perhaps, is accidental. This fact, too, increases the value of this plant, which seems to possess all the qualities which make a plant valuable in ornamental gardening. It is hardy, and it grows rapidly; the handsome and fragrant flowers, varying on different individuals from deep dark red to the purest white, are produced almost continuously from early spring to late autumn. The foliage is unequalled among Roses in luxuriance and in the depth and brilliancy of its dark green, which in autumn turns to intense shades of crimson and orange. The large and abundant fruit is not less showy than the flowers, while, more than all other Roses, it is free from the attacks of injurious insects. Care must be taken, however, to select plants of good varieties. Very inferior ones are often sold in nurseries, hybrids probably of this species and *Rosa cinamomea*, which are not worth planting.

There is a variety with double or semi-double flowers, which shows traces of the blood of some other species, but it is not worth a place in the garden. The best of a large number of varieties in this collection are one with very dark red, single flowers, a seedling raised by Mr. Dawson, and the pure white single-flowered variety.

October 21st.

The Forest.

The Forest Vegetation of North Mexico.—IX.

Juniperus pachyphlœa, Torr., one of the noblest of American Junipers, not rarely attaining a diameter of three or four feet, and a height of fifty, admirable for its symmetrical and compact habit and large reddish brown fruits, ranging through the mountains of southern Arizona, New Mexico and Texas, is at home on all the ranges about the divide and throughout the Cordilleras forest as far south, probably, as the state of Jalisco. From the cañons of the mountains about Chihuahua to the highest summits of the Cordilleras, it ranges through nearly 5,000 feet of elevation. Attaining its fullest development in rich and watered cañons, it nevertheless mounts in smaller specimens to high and dry slopes and rocky ledges.

On the driest crests of ridges near the summits, where the soil was little more than disintegrated porphyry or granite, grew *Juniperus tetragona*, Schlecht., branching at the base and sending up several bushy stems to the height of ten or twenty feet oftener than taking the form of a tree.

Even nearer the summits, but standing with other trees

in better soil, I found the other Juniper, *L. occidentalis*, var. *conjungens*, previously mentioned as common on the summits of the dry ranges of the centre of the plateau. With Junipers so common and widely distributed over Mexico, it would seem that the supply of railroad ties need not be imported from far northern swamps at a cost of a dollar apiece.

Pseudotsuga Douglasii, Carr., the Douglas Spruce, as might be expected, was found in high cañons with a northern aspect, not exceeding here *Pinus Arizonica* in its dimensions, and with it *Abies concolor*, showing a diameter somewhat less.

Above these on the cool talus of cliffs were occasional belts of Aspen, *Populus tremuloides*, so familiar to northern eyes, here a slender tree only a few inches in diameter.

Quercus grisea, Leibm.—Nine-tenths of the Oaks of these mountains would seem to be of this species. It mingles with the long-leaved Pines on the plains at the base, it predominates over the Pines and all other trees on the foot-hills and benches, and it straggles after the Pines up the slopes to the very summits. Only in the cañons that are deepest and wettest does it yield place to other species.

In these *Quercus reticulata*, HBK., reaches proportions gratifying to behold to one who, searching the Santa Rita mountains of Arizona for a specimen for the American Museum, saw but a single specimen worthy to be called a tree, that growing by a spring far up towards the summits, and only got down by great labor. All through these wet cañons and far up their sides, if it can have the shade of cliffs, this Oak habitually makes a tree of good size. Mounting the ridges, however, it diminishes in size in direct ratio to the amount of water in the soil, till on their arid crests it assumes the form of low bushes, and forms thickets of chapparal. It is my impression (I would like to see the test made), that the wood of this species most nearly of all Mexican Oaks approaches in quality that of our White Oak, *Q. alba*, and, if seasoned with due care, might be employed in carriage work.

Quercus hypoleuca, Engelm., also flourishing in the cañons, but spreading more commonly than the last over the cooler benches and slopes, makes a larger tree, one not rarely two or three feet in diameter. This is one of the most attractive of Oaks, in open situations showing a symmetrical outline with close evergreen foliage, deep green and glossy above, white or fulvous-tomentose beneath.

Quercus fulva, Leibm., appeared less frequent than the above species, and was only seen on the lower benches and ridges in warm exposures. It is but a small tree in its best development, seldom more than a foot in diameter and thirty in height. With its great leathery leaves it presents a striking appearance.

Arbutus Xalapensis, HBK., was found sparsely scattered over these mountains in a great variety of situations, and was seen on the ranges as far eastward as Chihuahua. Its diameter of one or two feet is disproportionate to its height. Of stooping habit, throwing out long tortuous branches without regard to symmetry, it assumes grotesque forms; and with its white bark, on the branches mostly smooth, its evergreen leaves and pink flowers, succeeded by scarlet berries, it is a tree of unique appearance.

Another *Madroña*, *Arbutus petiolaris*, HBK. (?) was not scarce, though confined entirely to the northern verge of ridges, and cool, dry soil formed of disintegrating porphyry. This tree is rather smaller than the last, but resembles it in appearance, except that its entire bark is smooth and reddish, and its leaves broader, serrate and pubescent.

There was a surprising paucity of shrubbery in these forests among the Oaks. I call to mind only *Ceanothus Fendleri*, Gray, *C. azureus*, Desf., var. (?) *parrifolius*, Watson, on rocky hills, *Arctostaphylos pungens*, HBK., in dry situations with *Pinus cembroides*, and *Spiræa discolor*, Pursh, var. *dumosa*, Watson, about the ledges of the summits.

Charlotte, Vt.

C. G. Pringle.

Correspondence.

The Mountain Laurel.

To the Editor of GARDEN AND FOREST :

Sir.—I have a desire to introduce the Mountain Laurel on a place about fifty miles south of the White Mountains, in New Hampshire, but have been told by skilled gardeners and others who have given particular attention to the subject, that it is practically impossible to transplant, or to propagate it from cuttings. I have planted the seed (a year ago), but, as yet, with no results. If any of your readers could give any hints or information on this subject, it would be much appreciated.

A. L. Dow.

Brooklyn, N. Y., October 15th, 1888.

[The Mountain Laurel (*Kalmia latifolia*) is easily transplanted from the woods. Young plants, not more than eight to twelve inches high, should be selected for this purpose. They should be carefully dug during the latter part of September or in October, and if they are to be planted at a considerable distance from the place where they have grown, the roots should be enveloped at once in sphagnum moss and the plants packed in boxes or barrels. They will need protection during the first winter, and should be set thickly in the ground, in a cold-frame or cellar, or, if there is no opportunity to protect them in this way, they can be heeled in in some sheltered situation and carefully covered with leaves and evergreen branches. In the spring the plants should be set in nursery rows and cultivated during the season. In the spring of the third year they will be large and strong enough to bear transplanting into the positions they are to occupy permanently; after that the plants will require no further care or attention. The Laurel grows in almost all soils except those strongly impregnated with lime, but in cultivation it flourishes most freely in a well-drained compost of sandy loam and peat. The Laurel may also be raised from seed, but the young seedlings grow slowly and require special care, so that persons unfamiliar with the business and without special facilities for raising seedlings, are not recommended to adopt this method of obtaining plants. The Mountain Laurel is grown largely in some European nurseries, and fine bushy plants, a foot high and as much across the branches, covered with flower-buds, can be imported and delivered in this city or in Boston in quantity at about thirty cents a plant.—Ed.]

Gorse and Scotch Heather in New England.

To the Editor of GARDEN AND FOREST :

Sir.—Can you tell me whether the Furze, or Gorse (*Ulex Europæus*), will stand the winter on the coast of Massachusetts, in a rather exposed situation?

And will any of the Scotch Heathers live in such a situation? Will you give me the botanical names of such varieties?

F. E. G.

[The Gorse was planted quite largely several years ago in Massachusetts, on the Island of Naushon, lying between the mouth of Buzzard's Bay and the Vineyard Sound, for the purpose of covering the ground and preventing the drifting of loose sand. It lived for a number of years, and plants may still be seen upon the island. It never spread much, however, and in severe winters always suffered. It cannot be considered hardy in New England, and its cultivation is not recommended, except as a garden-ornament in sheltered positions, or where it can be carefully covered and protected. The so-called Scotch Heather is *Calluna vulgaris*, a low, heath-like plant, with handsome purple flowers. It has been found growing spontaneously in one locality in Massachusetts, and it is not rare in Newfoundland and far northward on this continent. Its true home, however, is in northern Europe. Although a hardy plant, it cannot be recommended for planting in exposed situations on the New England sea-coast, as it often suffers in severe winters when not carefully protected. The plant which most

resembles the Gorse, at least in flower, which is really available for planting on the New England sea-coast, is the European Woad-wax (*Genista tinctoria*), a low shrub of the Pea family, with bright yellow flowers. This plant now occupies many hundred acres of sterile, hilly land near Salem, in Essex County, Massachusetts, near the sea-coast. It spreads rapidly, and when once it has taken possession of the soil, no other plant can dislodge it. The appearance which these hills present when the *Genista* is in bloom is striking and beautiful, recalling more clearly to the mind a Gorse-covered moor of Europe than anything which can be seen elsewhere in the United States. The *Genista*, however, has proved itself a dangerous and persistent weed in Essex County, and there is always danger that it will, when planted, spread over and ruin valuable land. It is only beautiful while in flower, being quite insignificant during the remainder of the year. There are such a number of dwarf native shrubs with beautiful flowers, or with handsome foliage, which can be used for covering rough and exposed situations along our coast, that it does not appear necessary to look to foreign countries for plants for this purpose. Plantations made of our native Roses, the Bayberry, the dwarf Sumachs, the different Blueberries, the Beach Plum, the Hudsonias, the dwarf Cherry, the dwarf Viburnums, the Sweet Fern, are suitable and appropriate for the New England coast. Such plantations, made without the aid of human hands, may be seen in many places along the shores of Cape Cod and Cape Ann. Nature, with all the wealth of material at her disposal in more favored climates, has never made combinations more harmonious in color, or more suitable to their surroundings. They put on in autumn, too, after the beauty of the spring and the summer have vanished, a richness of color which gives to our coast scenery, at this season of the year, a character peculiarly its own, and so beautiful that the mere suggestion of introducing into the scene any foreign element which cannot heighten and must diminish this distinctive charm seems undesirable, to say the least.—Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—I have been greatly annoyed by ants in the house, where they swarm through kitchen and pantries, and on the lawn, where they construct unsightly little mounds, and crawl over every one who dares to sit on the grass. What is the best defense against this invasion?

Lancaster, Pa.

E. M.

[First find the ant-hills which harbor them. This is not difficult if sharp watch is made of the directions in which they travel. Professor Cook, of Michigan Agricultural College, then attacks them by sinking a crow-bar into the centre of the mound till it reaches the level of the lowest gallery in the ants' nest. Half a gill of bisulphide of carbon is then turned into the hole, and a shovelful of clay is at once thrown on and trodden down compactly. This holds in the poison fumes of the volatile liquid, and soon destroys the last ant. In the latest Bulletin of the Massachusetts Agricultural College the same advice, practically, is given by Professor Fernald. A large ant-hill, nearly six feet square, next to the underpinning of a house, was doing much damage. The ground was undermined so completely that a person walking over it would sink in quite deeply, and the grass on the hill was nearly dead. Holes were made with a small stick, about fifteen inches apart and six inches deep, and two or three teaspoonfuls of the bisulphide were thrown into each hole, after which the holes were closed and the earth pressed down by stepping on them. The treatment was successful. The closing up of the orifice seems to be essential. Bisulphide of carbon is a chemical preparation that can be found at any drug-store. It has a most disagreeable smell. The bottle in which it is contained should be kept tightly stopped, as it quickly loses its strength when exposed to the air. The fumes should not be breathed while using it, because

they are injurious as well as disagreeable. As it burns at a temperature of 107° Fahrenheit, it should be kept away from fire.—Ed.]

Recent Publications.

Annual Report of the Division of Forestry, Department of Agriculture, for 1887: B. E. Fernow, Washington, 1888.

The Forestry Division of the Department of Agriculture was organized chiefly as a bureau of information, and the report before us, while giving an account of the methods by which this educational work has been carried on during the year, contains much besides that will afford instruction, provoke inquiry and stimulate interest. Like its predecessor, this report contains few statistics, for the good reason that the department has not at command the elaborate machinery needed to secure accurate figures. Some imperfect data in regard to the amount of forest planting in the West are given, and Mr. Fernow takes occasion to note that many reports of tree-planting in the prairie states are misleading exaggerations. Even when the number of trees planted is accurately given, they often include those set by the roadside and about dwellings for ornament and for shelter belts, as well as those in forest masses. But scattered trees can never make a forest, and it is unfair to divide the whole number of trees planted by the number required to the acre under the Timber Culture Act, and consider the result as the acreage of artificial forest. And even if the acreage planted under this act were correctly stated, we have no knowledge of the present condition of the trees, or what per cent. of them will be likely to live and thrive. Mr. Fernow rightly insists that we are using up our wood crop more rapidly than it reproduces itself. Those who doubt this swift reduction of our supplies because of our still abounding forest wealth and because it is true that in some parts of the country the wooded area is increasing on abandoned farm land, should remember that even where there is no absolute denudation the forest may deteriorate in quality, and that the new crop that is springing up on the old fields is quite inferior to the original growth.

This report deals mainly with a different class of subjects from those treated last year. The chief value of the last year's report was in the section which set forth the principles of forestry proper. The most interesting portion of the present report is that in which is outlined a system of study and original investigation with a view to place the practice of forestry in America on a rational basis. It is argued that if the Division of Forestry is to accomplish the most worthy results, it is time that it took a step in advance of its old work of compiling doubtful statistics, of recounting what has been done in the Old World, and of exhorting our people not to squander the forest wealth of the country. All of this was needed, perhaps; but what Mr. Fernow calls "missionary work" can safely be left to the public press and to the forestry associations of the different states. What is now needed is exact knowledge—such knowledge as can only be gained by careful experiment and study. It is to suggest the lines upon which such inquiry should proceed, and to make a proper co-ordination and subordination of the various fields of investigation that the topics have been grouped into systematic arrangement.

It may be that experience in studying and teaching will suggest some modification of this schedule, but as it stands it serves a good purpose in presenting to readers, who have not given serious and continued thought to the matter, an adequate conception of the wide range of subjects to which the American student of forestry can profitably direct his attention. And very plainly it would be to the general advantage if the Department of Forestry, the agricultural colleges, the experiment stations and private investigators should devote themselves, according to their several lights and abilities, to researches of the kind here indicated. It is true that forests have been and will be successfully planted and managed, and forest crops profitably harvested by men who know little, in a scientific way, of the life history of the trees they plant and fell, and still less of the general distribution of our forest flora or of the technological properties of different woods. It is equally true that there have been entire generations of fairly successful farmers who have had little or no exact knowledge of the sciences which underlie the practice of agriculture. But no one will contend that our agriculture has not been improved materially in recent years by the published results of scientific research. Farmers now talk intelligently of nutritive ratios and of the proper proportions of nitrogen, potash and phosphoric acid in their fertilizers, and it is this knowledge which makes our agriculture progressive and full of prom-

ise. It is not too early to begin the systematic study of forestry with the same purpose. It will be years, indeed, before the same care will be given to the production of forest crops here that is used in some countries of Europe. Our time for strictly scientific forestry has not yet arrived. But years will be required before we shall be able to collect the facts and experience we shall need, when the refinements of forestry, with its close calculations and intensive methods, can be practiced to advantage.

To this exposition of a plan of comprehensive study, Mr. Fernow adds some suggestive paragraphs on experimentation in the forest, the nursery and the laboratory, together with observations meteorological and climatic. The successful practice of the future must be based upon methodical experiments conducted persistently by men of scientific training. In no other way can data be furnished that will enable us to answer with confidence such elementary questions as: What is the best time to thin? At what period of growth can the forest crop be most profitably utilized? How do the financial results of natural reforestation and artificial planting compare? Mr. Fernow indicates the lines which these investigations are to follow, and illustrates, by examples, the kind of knowledge that is to be gained in this way. The entire section is most valuable as affording popular instruction upon points to which general attention has not been directed.

The report also contains a brief summary of the condition of the forests in the several states, notes on a few timber trees, certain bulletins which the division has issued during the year and much miscellaneous matter. Altogether, it admirably accomplishes its purpose to disseminate information, and it cannot fail to instruct the class of readers which it will reach and give them a clearer conception of the importance of the problems in forestry which now confront the country and of the proper means to employ if they are to be satisfactorily solved.

Recent Plant Portraits.

PTEROCARYA FRAXINIFOLIA, *Gardeners' Chronicle*, October 6th; a hardy tree belonging to the Walnut family, bearing in long, graceful racemes small hard nuts with broad, membranous wings. The finest specimen of this tree in the United States is believed to be in the Harvard Botanic Garden in Cambridge. There is a second species, a native of Japan, *P. stenoptera*, now sometimes cultivated, and of very considerable promise as an ornamental tree.

JUGLANS MANDSHURICA, *Gardeners' Chronicle*, October 6th; a hardy Walnut from Amurland, closely related to the North American Butternut (*J. cinerea*). This interesting species has been an inhabitant of the Arnold Arboretum for a number of years, ripening large crops of fruit there every year. It is a tree of compact and handsome habit, of considerable ornamental value, and the nuts are of a sufficiently good quality to make it quite possible that this species may in time become of value as a fruit tree in the Northern States, and in other regions where the English Walnut cannot be grown successfully.

PSEUDOPHENIX SARGENTI, *Gardeners' Chronicle*, October 13th.

LILIUM NEPALENSE, *Gardeners' Chronicle*, October 13th; a handsome Lily from the Central Himalayas, requiring greenhouse cultivation. The flowers are described as greenish on the outside, with the interior of the perianth an intense red-crimson color, with light greenish tips.

Notes.

The Chrysanthemum Show of the Massachusetts Horticultural Society will be held in Boston on 14th, 15th and 16th of November.

No less than 150 species of Primrose, divided into sixteen sections, are recognized by the German botanist, Pax, in his recent monograph of this genus.

The Forestry Congress in Atlanta will meet on December 5th, and not, as previously announced, on November 29th, which is Thanksgiving Day. The Southern Passenger Association, which embraces all the railroads south of the Potomac, and, on this occasion, the Pennsylvania system, so far as New York, has arranged for round-trip tickets to the great National Exposition in Augusta, Georgia, at one fare, and will grant stop-over tickets to attend the Forestry Congress in Atlanta. As the northern and southern societies will be consolidated in Atlanta, a large delegation is expected on December 5th. Full particulars can be had by addressing Mr. Sidney Root, Atlanta.

In the rich prairie soil of the Kansas Agricultural Experiment Station, where fertilizers and yard manure proved of little value, an application of salt at the rate of 300 pounds to the acre, increased the yield of wheat perceptibly.

Mr. T. S. Brandegee has discovered this summer *Pinus Torreyana* growing upon Santa Rosa, one of the small group of islands which lie off the Californian Coast in the latitude nearly of Santa Cruz. The discovery is an interesting one, as *Pinus Torreyana* has been considered one of the rarest and most local of American trees, being known formerly only in one very restricted locality in the neighborhood of San Diego, California.

Great baskets of the Fringed Gentian, the loveliest of all our late autumn wild flowers, appear this year in Boston in the hands of street flower-sellers. It would be difficult to conceive anything more beautiful than the dark blue of this delicate flower when thus seen in great masses. Very attractive, too, are bunches of the bright colored fruit of the Roxbury Waxwork (*Celastrus scandens*), surrounded with *Kalmia* leaves, which appear just now very popular with people who purchase flowers in the streets of Boston. Every few minutes a woman may be seen with one of these bunches on her dress or in her hand.

The tropical plants which have filled the two large vases in front of the City Hall, in Boston, have been replaced with *Chrysanthemums* in full bloom. The effect is excellent. The decorative value of the *Chrysanthemum* is only just beginning to be appreciated in this country, and they will grow in popularity as they become better understood. They can certainly be used with great advantage in this way, and if early flowering varieties, to be followed by those which bloom later, are selected for the purpose, there is no reason why vases and many garden beds, especially in cities, cannot be made attractive for at least six weeks after the frost has destroyed the beauty of more tender plants.

The gelatine which is contained in the "edible birds'-nests" of the Orient, and which, of course, is what constitutes their nutritive quality, was once supposed to be a secretion from the salivary glands of the bird itself—a species of swift. But it has been proved to be a Sea-weed, which the bird often brings from long distances. Mr. J. B. Steere, writing recently in the *American Naturalist*, describes a visit which he paid under the guidance of professional nest-hunters to the caves where these birds build in the Philippine Islands. They build in utter darkness, and it takes about a month to complete a nest. This the hunter must secure before the eggs are laid, otherwise it would naturally be unavailable for culinary purposes.

A correspondent of the *Revue Horticole*, writing from Nancy, speaks enthusiastically of the new race of hybrid Gladioli obtained in the famous horticultural establishment of Monsieur Lemoine, by crossing *G. Saundersi* with the so-called Lemoine Hybrids, obtained by mingling the blood of *G. aureo-purpuratus* with some of the varieties of *G. Gandavensis*. The shape, size and the markings of the flowers of this new race are said to be marvelous and to display a beauty heretofore unknown among Gladioli. It is probable that one or two of these varieties will appear in the new edition of the Lemoine catalogue and will be offered for sale. Some of the seedling Montbretias, raised in the same establishment, are said to show great improvement in the form and in the color of the flowers.

The general introduction into commerce of lumber manufactured from the Gum-tree or Tupelo (*Nyssa sylvatica*) is hindered by the practice of some dealers of attaching false names to it, with the idea of disguising its real character. In England it is sometimes called Satin Walnut in the trade; in this city it can be found under the name of Hazel-wood; and it has appeared as Arkansas Redwood. Gum is a valuable wood when its peculiarities of excessive shrinking and warping are guarded against by proper methods of manufacturing and seasoning, but it gains nothing by having false and misleading names attached to it. And in the same way Sycamore lumber is just as valuable when it is called Sycamore as when it is called Satin-wood, as is sometimes the case in eastern markets.

Colonel Pearson states, in the *Philadelphia Weekly Press*, that the cost of treating an acre of Grape vines with the copper sulphate solution, which has proved efficacious against both the black rot and the mildew, need not exceed, for labor and material, ten dollars. The solution which he uses is known as the Bordeaux mixture of copper sulphate and lime, the

formula for which was given in the issue of GARDEN AND FOREST for September 19th. This mixture is a whitish liquid resembling somewhat thin milk of lime, and the precipitate should be constantly stirred as the vines are sprayed through a Cyclone nozzle. The first application should be made before the vine-buds open in the spring, and in seasons favorable to the growth of the rot fungus, it should be repeated every three weeks. For a certain protection against the rot, every cluster and every berry must be reached by the spray, and this can be easily accomplished with the machinery now at command.

Early grafting of the Cherry in the open air is always recommended, and dormant buds are considered necessary in grafting under cover. The advice is well founded, but the true reason for it is rarely given. If the stock is as forward in growth as the scion, a union of the two can be made quite late in the season. The essential requisite is that the wood of both should be in the same condition. In a late bulletin of the Iowa College Experiment Station, Professor Budd cites an instance where it became necessary late in April to take up several valuable Cherry-trees loaded with fruit buds. All the scions were cut off down to the two-year-old wood, and set on Mazzard seedling roots in the graft-room. The grafts were put in the nursery a few days later, and over ninety per cent of them made strong growth. In this case the buds were started, on one variety, so as to exhibit the points of the embryo leaves, yet the roots taken from the cellar had started fully as much. If the seedling had been kept dormant in the ice-house, probably not a single scion would have united with them. This principle applies to all top-working in the open air of Apple, Pear, Cherry, Plum, etc. If the work is deferred until the buds on the stocks are well started, the scions should be about equally advanced.

In 1883 Professor Budd imported one-year-old Cherry trees of such varieties as he considered promising for the north-west, from the valley of the Moselle, in eastern France, and eastward to the Volga, in Russia. The trees have, so far, proved as hardy as our native Plums, and many of them fruited heavily this year. The fruit is satisfactory in quality and color, but not in size. The smallness of the fruit may have been due to the strong growth of new wood, induced by severe cutting for scions in autumn. In a late bulletin Professor Budd recommends that these trees be headed low, and adds that, even in western Europe, low cordon and bush training of the Cherry is becoming common. In eastern Europe, in sections remote from large bodies of water, all stone fruit trees are headed low. In the Volga region the Cherry is grown in bush form, with several stems like the Currant or Gooseberry. Experience has also favored very low stems, or even bush form, in all the prairie states. Often the stems are fatally injured when the twigs show no discoloration. Fortunately, many of the east Europe varieties favor the shading of stems by their pendent habit of growth. But even with these it is best to have low stems, the lower the better.

A hundred years have passed since the Botanic Garden at Calcutta was established, and Dr. George King, the superintendent, joins to his last annual report an interesting historical sketch of this famous institution. It was founded by the East India Company, upon the recommendation of one of its servants, Colonel Robert Kyd, who became the first superintendent, holding the position until his death in 1793. Among his successors appear the names of many distinguished botanists, of whom the best known are Roxburgh, the author of the earliest Flora of India; Wallich, whose three volumes upon some rare Indian plants are among the most sumptuous in botanical literature, and Dr. Thomas Thompson, the co-worker with Sir Joseph Hooker in Indian botany. The garden has been of immense service in making known and distributing Indian plants and in the introduction of useful plants, like the Tea and the Cinchona, into Indian cultivation. The garden was devastated by a terrible cyclone in 1864, and a second cyclone, a few years later, almost ruined the few plants which had escaped the first. A troublesome weed, *Imperata cylindrica*, then spread rapidly over the ground of the whole garden, which had become exposed to the sunlight by the destruction of the trees, and when Dr. King was appointed superintendent in 1871, it was in a miserable condition. He has, however, entirely replanted the garden with reference to landscape effect and erected new conservatories and a new building for the immense herbarium, principally of Asiatic plants, which is connected with the garden, and which is constantly enriched with new collections. It is said that of the trees which were growing in the garden in 1867, the great Banyan tree is the only one now left standing.

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Chrysanthemums.

THE remarkable popularity of the Chrysanthemum in recent years can hardly be classed among those transient floral epidemics, so many of which are on record in the history of horticulture. The rage for Sunflowers and Daisies, with many another ephemeral caprice of this sort, died out as suddenly as they arose, not because the flower which chanced to be the prevailing fashion had no merit, but because an exaggerated or fictitious beauty and value were claimed for it. The interest in the Chrysanthemum has had a slow and steady development, and it is based on the genuine worth of the flower. It appears at a time when rivals are few and its blooming period extends over a long season. It ranges through a series of rich, mellow tones of color, and no flower lends itself more readily to the production of decorative effects. In form it has the merit of symmetry, without a hint of rigid formality or any chilling suggestion of artificiality, such as characterizes a double Dahlia or a prize Camellia. No other flower equals it in the diversity of form which it assumes within the limits of perfect proportion. Each variety and class of varieties shows such a marked individuality in the shaping and arrangement of its parts, or such a delightful waywardness in the curving and twisting of its florets, that one can examine a hundred flowers and never find the outline of a single one repeated. When it is remembered, too, how much of promise for the future of the Chrysanthemum there is in this free habit of blossoming out into novel and graceful forms, we can rest satisfied that not even the Rose will more securely maintain its position as an established favorite among flowers.

The history of the Chrysanthemum's development from its earlier and more simple garden forms, is most interesting. It will suffice for our present purpose to note that Loudon, in his Cyclopaedia published in 1824, speaks of numerous varieties "recently obtained from China," where the flower had long been cultivated. He enumerates forty-four varieties, of which few are now to be found in cultivation. The Large Lilac is one of those which still may be found in old gardens on Long Island

and in other parts of this state. Perhaps several of them still survive in old places still further south. Some of them, like the Tasseled Yellow and White, the Yellow Waratah and the Golden Lotus-flowered, would be appreciated now if they could be re-introduced and cultivated under approved modern methods. Samuel Broome, in 1857, published a list of the varieties then growing in the Temple Garden, London, and among them were 184 varieties of what was known as the Chinese Chrysanthemum, eighteen Large-flowered Anemones, 140 Pompons or Lili-puts, and thirty Anemone Pompons. Of these, there are found in collections to-day, twenty-five Chinese, eight Chinese Anemones, twenty-one Pompons and ten Anemone Pompons. It is hardly twenty-five years since flowers belonging to the Japanese section were introduced to general notice. It was in 1865 that the *Gardeners' Chronicle* reported that Mr. Veitch had sent home "three very distinct forms, evidently the representatives of many beautiful productions yet unborn." Two of them had peculiar ligulate ray-flowers, all or nearly all of which were drawn out into extremely narrow, sharp terminations, now and then inclined to fork. The third was of quite another kind, close-headed, incurved, with all the florets divided into two irregular and unequal lips. The now famous Grandiflorum was sent by Robert Fortune to John Standish, of Ascot, and shown by him as early as 1862. At the same time were exhibited Laciniatum and Japonicum, the former spoken of as a "distinct Japanese variety of the Chinese Chrysanthemum with white flower-heads composed of fringed tubular petals." The report speaks of the latter as being remarkable for its slender, tubular, curved florets. How all these peculiarities have been intensified since their introduction, and fused together into new combinations, is made plain in any ordinary collection to-day.

Enthusiastic cultivators in this country recognized the value of the Chrysanthemum long ago, but it is scarcely more than seven years since this flower first attained its real popularity here. Mr. H. P. Walcott, in Boston, Mr. W. K. Harris, in Philadelphia, and Mr. John Thorpe, in New York, were most conspicuous in bringing it into public favor. The importation from Japan, by Waterer, of some fifty varieties, in 1883, many of which were most distinct and beautiful, gave a new impulse to hybridizing, and now the new kinds that appear every year are almost numberless. At least 10,000 tried seedlings have been on exhibition for the first time this year. The diversity of form and color displayed is almost infinite, and the various strains have been so intercrossed that the seeds from a single flower-head will often produce examples of the types most widely separated in structure and size, together with intermediate and kindred forms. The strong propensity of the Chrysanthemum to variation has been of great advantage to the originators of new varieties, and, by careful selection, the improvement in color has been as striking as the changes in form. Shades and tints which were unknown in this flower a decade ago are now common. Maroons, crimsons, rose, pink and buff have all become more decided. The markings of parti-colored flowers upon the tips and along the marginal lines have become more distinct, and the production of a scarlet flower is not despaired of by those who have done the most to bring out the newer and formerly unknown shades. It is small wonder, then, that exhibitions devoted exclusively to Chrysanthemums have been held in at least a dozen of our cities this year, while only four years ago Boston, New York and Philadelphia alone had such displays.

No one can prophesy in what direction the next marked improvement in the Chrysanthemum may be looked for; but, judging from the past, striking variations from the forms we are now familiar with may be expected. Those who studiously note the development of new seedlings are quick to mark the appearance of slight peculiarities, for these may be the forerunners of distinct types. For some

years the appearance of hair-like growths from the under side of an occasional floret has been observed, but they were never sufficiently numerous to give any character to the flower. But last year the remarkable variety, Mrs. Alpheus Hardy, which was figured in the first number of this journal, was found in a Japanese importation, and in this each floret was thickly set with these slender growths, giving an entirely new character and expression to the head. Up to a comparatively recent time the section with lacinated florets invariably had small heads, which did not show distinctly this characteristic. Some of the newer varieties of this type have florets three inches long, with four or more bifurcations, and spreading at least to three-quarters of an inch in width. In many cases the florets, for two-thirds of their length from the disc, are tubular, and then branch abruptly into their particular toothed forms. And the disposition of the florets is quite as interesting as their shape. In many cases their arrangement is flat; again they are reflexed; while in others still they are incurved and confused into a globular mass of slender shreds, which often show the upper and lower surface in each floret. But slight modifications of these characters are needed for the origination of a new class of *Chrysanthemums* as distinct as any heretofore produced.

But whatever the forms with which the *Chrysanthemum* may be endowed in the future, we may feel sure, from what we know of its inherited tendencies, that the flower will continue to show that freedom and fluent grace of outline which so strongly commend it to the taste of the time.

Piazas.—II.

WE explained last week that there is no need for piazzas so extensive as those which a few years ago were commonly attached to our country houses. Their full purpose may be served in almost every possible case if they are placed only on one side of the house, or on a corner, so as partly to encircle two sides. The interior is thus left more free for the admission of light and sun, and architectural effect is improved, while convenience is amply considered. Especially is this true if the covered piazza is supplemented by other external features.

Indeed, the chance to secure such features is in itself sufficient reason why piazzas should not be too large. In a house of the old piazza-encircled type it was difficult, for instance, to emphasize the chief entrance, which, if a home is to have the right effect, should always be hospitably prominent. Upper balconies, which are often so useful as well as pretty, could not be well placed above the long piazza roofs. Terraces were hard to treat, and that delightful feature, the Italian loggia, was impossible, at least on the ground floor.

Of late we have begun to employ these other external features with the happiest results in the way of comfort as well as beauty. The front door is accentuated by an independent porch, often usefully extended over the driveway. Upper balconies are attached to the chief bedrooms or thrown out from any window which chances to command a particularly attractive view. Uncovered terraces of turf or of stone are formed where needful, and a portion of the piazza itself is often left uncovered, supplying a pleasant place of resort when dull weather or autumn cold renders a roof unnecessary, and delightful at night in warmer weather. And loggias are seen in both the lower and the upper stories.

No architectural innovation is more to be commended than the use of the loggia, which may be described as a recessed piazza—a piazza set back into the body of the house, flanked at either end by the walls and covered by the projection of the upper story. In Italy it does not usually appear on the ground floor, for there this floor is not devoted to the chief apartments; but its effect is just as good when it is adapted to our own customs of building and living. In certain very exposed situations the piazza may well be entirely banished in favor of a

loggia, and in others a small open piazza may be effectively supplemented by a larger loggia; while in almost every country house at least a little loggia should be introduced either up-stairs or down. Our climate is so very variable that too careful a provision can hardly be made for changing winds and skies and temperatures.

Another useful device is a terrace protected by a trellis over which are trained vines that will soon form a thick summer covering, while their naked stems will in winter admit light and sun to the rooms behind. Or an awning may be used if its effect is preferred, or if there is danger that the vines will harbor too many mosquitoes. It has, indeed, a certain advantage over vines in that it may be rolled back in dark weather and supported on movable posts, which can be taken down in winter. Of course neither of these expedients really fills the place of a true piazza, for although they screen from the sun they admit the rain; and if they are of great extent they detract from solidity of effect in the house. But a small vine-covered terrace is never inadmissible, and a small awning is rarely offensive; and they may at least be recommended as supplements to a true piazza, or even as substitutes for it in houses occupied throughout the year and in positions where a permanent piazza-roof would be a serious inconvenience.

We have already said that the pleasing treatment of piazzas is one of the most difficult of current architectural problems. It is true that charming houses with long verandas have been built for generations in certain southern countries. But although we may get valuable hints from them, they cannot be used as models. Ours is not a truly southern climate, but one in which almost tropical heat alternates with almost Siberian cold. Our more complicated habits of life demand more complicated ground-plans than those which serve, for instance, for an Indian bungalow, and every deviation from a simply outlined and low-roofed form makes the right architectural use of piazzas more difficult. Yet until within quite recent years the problem was hardly recognized as such. No attempt was made so to unite the piazza with the house, in both form and material, that it should seem an integral part of it, and not a mere attached shed. Whatever the material of the house, the piazza was built of wood, and it was simply tacked on to the walls without the slightest thought of union. Its roofs had no relation to the roofs of the house, and its forms were very slight and fragile—the jig-saw running riot in a vain effort to adorn it, but no serious attempt being made to build it beautifully. To-day we see a very great change for the better. The piazza is treated—with more or less success, of course—as part and parcel of the house. It is borne by a solid substructure instead of by isolated posts which allow the cellar walls to be seen, or by a chicken-coop lattice. This substructure is often continued around the piazza as a solid parapet, some three feet in height, which has both artistic and practical merit, for it increases solidity, and therefore dignity of effect, and it screens the feet of the occupants from the wind and protects them somewhat from the gaze of passers while interfering not at all with coolness or with freedom of outlook. If the house is of brick or stone the same material is used to build posts of the piazza, or if wood is employed, simpler and more artistic forms are chosen for them. And it is covered by an outward sweep of the main roof of the house, or by such a disposition of an independent roof that it may play a conspicuous and harmonious part in the general outline of the building. On houses of the revived colonial type the piazza naturally has a flat, balustraded roof, which may be utilized as an uncovered balcony for the upper floor, or some parts of it may be roofed in again as an upper piazza. Difficulties are hardly as great, perhaps, when a flat roof can be employed, as when a steep one is required by the fashion of the greater roof above. Yet, whatever the scheme, we here and there find instances, in ever-increasing number, where it has been thoroughly well managed. Of course an ideal degree of success is seldom seen as yet, and many of our new houses

are quite as ugly in their own way as the shed-encircled boxes which preceded them. And they are, perhaps, even more distressing to the eye; for the old house had at least the merit of frank simplicity, while the new one has often the great demerit of seeming a labored effort after as much eccentricity as possible. Yet, taking good and bad together, the general improvement which has marked our architecture in recent years can nowhere be more clearly read than in our country homes. And it is a most significant proof of the genuine, vital and promising character of our progress that these homes should have been so greatly improved, not through the direct imitation of foreign models, but through the development of indigenous fashions, and the incorporation—despite difficulties which might easily have been thought insuperable—of the “vernacular” piazza.

A Glimpse of Nantucket.

FOR many years the population of Nantucket has been steadily declining. Counting nearly 10,000 souls in 1840, it does not count 4,000 now. And these may be held to represent a “selection of the unfittest,” for year by year the more energetic and intelligent youths of the community have gone to seek their fortunes in the outer world. Meanwhile, until quite lately, the island has been scarcely thought of in the outer world save in connection with bygone whales, and has generally been described as a featureless expanse, interesting simply as a bit of sandy wilderness isolated in a wilderness of waves.

Now, however, a change has come—not, indeed, over the numbers or the spirit of the natives, but over the minds of those whom they call “off-islanders.” Summer tourists have discovered the cool, bracing equanimity of the Nantucket climate, the homely picturesqueness of its quiet town, and its rich facilities for bathing, boating and fishing; and they flock to its shores in increasing thousands summer after summer. How the islanders lived before this influx began, some twelve years ago, it is hard to imagine, for I have never seen a place more destitute of signs of an attempt to earn a living. There is now no whaling, which is largely the fault of external circumstances; but there is scarcely any sheep-raising, and this must be the fault of the islanders themselves. Great flocks once pastured over the island. Wool was then the main concern and was chiefly used at home. But now, with improved means of transport and the summer immigration, it seems as though a little energy might make the raising of mutton profitable. Agriculture is almost as non-existent as sheep-raising. Nearly the whole population lives in the town and a few distant villages. Farm-houses are few and widely scattered, and the cultivated fields which surround them are rough and very scanty. In the town and along the edges of the shore the summer colonists are likewise gathered, so that a mile away from this shore one can fancy one's self a hundred miles away from anything that approaches to human activity, wealth or progress.

More negatives must still be used before I can begin to tell what does exist in the central regions of Nantucket. In the first place, there are no stones. Knowing that the island was formed during and after the glacial epoch, and is a mere mass of “drift,” one does not look for the bed-rock of the mainland to which, for a time, it was attached. But it seems more reasonable to expect those boulders which are strewn over the whole surface of New England, and nowhere more thickly than along the coasts nearest to Nantucket. Yet they do not exist. Broadly speaking, the island is divided into a higher eastern and a lower western portion of almost equal areas. The latter I had no time to visit during a brief two days' sojourn; but many hours of diligent driving showed me the whole of the eastern portion, and I could count on my fingers the stones I saw. Of course, this means that there were none of the picturesque walls which I had left behind in Plymouth County, and which are to be found again on Block Island a little to the westward. But, from a practical point of view at least, the lack of such walls does not greatly matter. Where there is so little to fence in, only the lover of beauty need regret the lack of good fencing material.

Finally, there are no trees on Nantucket, except those which have been planted in the streets of the town, and some scattering plantations of Pitch Pine which were made about forty years ago midway between the northern and the southern shores. The farm-houses stand naked and alone, and even along the many little lakes and ponds one sees neither groves of trees nor

thickets of shrubs. The so-called Pine woods, moreover, are almost caricatures of the term. There is no more dauntless and long-suffering tree than the Pitch Pine, but it can seldom have struggled with greater difficulties than on Nantucket. No individual rises more than ten or twelve feet above the soil; all are grotesquely distorted by the fierce sea winds; many are scarred and embrowned by the touch of fire, which starts readily and runs persistently in the dry matted grass; and they look, in consequence, like a collection of ancient dwarfs, not like young woods with possibilities of further growth. Yet from even a little distance these woods actually seem to deserve their name, for everything vertical “tells” with extraordinary force in this landscape, where vertical things are very few, and where slight inequalities of surface, therefore, give the look of far horizons to spots quite near at hand. The eye is so entirely deprived of help in its calculations, that even experience does not soon teach it how to compute distances or dimensions. The first mistake I made was to exclaim at the presence of a great hotel in the middle of a moorland wilderness, the building being, in fact, but a farmhouse of moderate size. And after several such mistakes, with a full sense of the likelihood of error, I pronounced a pair of isolated objects to be tall chimneys about five miles off and found them merely tombstones not a mile away.

These groves of gaunt yet dwarfish Pines, then, are the only trees which meet us outside the town, although we are told that White Oaks once grew in certain places large enough to be used for building purposes. The earliest local records speak of “meadows, woods and uplands,” and one district bore the name of the “Long Woods;” but a full century ago the island was represented as “wholly destitute of firewood,” and dependent, as it is to-day, on Cape Cod for its supply. In the town a great deal of planting was done in former years. When we stand on one of the railed “roof walks” that are so characteristic of a community which perpetually went down to the sea in ships, the panorama of gray roofs is interspersed with an almost equal quantity of foliage. The Elms have stood their long battle with the sea wind fairly well, but more interesting are the Ailanthus trees, which quite as frequently appear. One-sided, as a rule, and often naked of foliage save towards the extremity of their branches, their gray bark and picturesque structure harmonize admirably with the gray picturesqueness of the old unpainted houses; and their foreign air seems appropriate in a place which once was filled with trophies of every kind from many a distant shore.

But the real interest of Nantucket lies in those wide tracts away from the high sandy cliffs where, as far as the eye can reach, no tree is in sight. The prospect is peculiar even to eyes familiar with Block Island and the eastern portions of Long Island. At Block Island the surface undulates perpetually and abruptly, is thickly bestrewn with boulders and shows scarcely any vegetable covering save a close, yellowish grass. At Montauk there are also wide, boldly rolling stretches of such grass; but others where white sand is spotted with great tufts of *Hudsonia*, and others again where moisture has produced beautiful thickets of shrubs and veritable little forests filled with many species of trees. But at Nantucket the surface is either quite flat for miles or gently rolling in long swells; the ponds are encircled merely by a border of sedges and tall grass, and seem to have no effect upon the soil beyond; there are no reaches of naked sand, and few where the grass is not thickly beset with flowering plants. Where it grew most abundantly it was filled in September with Asters and Golden Asters and Golden Rods and Everlastings—all stunted by the wind to a few inches in height, but vigorously blooming—and with purple *Gerardias*, showing larger and more deeply colored flowers than I had ever seen elsewhere. But the most characteristic and charming tracts were those which bore no grass, but were covered by a close growth of low undershrubs and trailers—*Hudsonia* of both species, Bearberry and the Broom Crowberry. Acres upon acres in one direction were covered with the last two alone, alternating in large patches and growing with splendid luxuriance, the Bearberry clothing even the sides of the road with a thick mat of glossy leaves and dark red fruit, and the Heath-like Crowberry rising in dense miniature evergreen thickets, and contrasting exquisitely with its neighbor. A prettier combination I have never seen, and it is hereby recommended to the owners of sandy sea-shore places as an excellent substitute for a turfed lawn. It is as delightful to walk upon as to look at, owing to the springy, Heath-like quality of the Crowberry stems. *Hudsonia* did not grow with as much luxuriance as at Montauk, yet it was often beautifully effective here and there. I was told that the true Heather (*Calluna vulgaris*) could be found in a few spots on the island,

did one know where to look, and its name is included in the list of native plants printed in the local guide-book.

This list—compiled by Mrs. Owen, of Springfield, Massachusetts—reveals how rich the island flora is. From the botanist's point of view the abandonment of sheep-raising must be accounted fortunate. For, as another contributor to the guide-book writes, when sheep were allowed to roam at large over the commons, it was only by the most diligent seeking that the botanist obtained perfect specimens of any flowering plant. "One feeble specimen of the blossom of the *Hudsonia tomentosa* could be found in perfection where now, freed from the sheep, . . . its yellow flowers are to be had for the glancing. Even the varieties of the Golden Rod, . . . which furnish the rich covering to our commons at times, were not a familiar feature, though known and specified by the scientists of the island." Then it must have been true that Nantucket was a barren waste to the eye; but it is truer to say at this present time that it is a garden of flowers from summer's end to end.

And, according to the belief of many persons whom I met, it might be made a wealth-producing garden, too. The soil, it is said, would be well adapted to certain cereal crops, were it only manured a little; and, even now, the vegetables it produces are of excellent quality. It seems as though there must soon come a time when these vast tracts of now unprofitable land will be turned to some account, perhaps by a revival of energy on the part of the islanders, perhaps through the advent of "off-islanders" intelligent enough to seize the advantages of a spot where a house, with considerable land about it, may be bought for one or two hundred dollars, and where the rapid growth of a summer population must create an enormous demand for market-garden products. But the time to see Nantucket is before this day arrives. Already the aspect of the town and of many parts of the shore has been grievously altered by the tourist throng; and when the savage simplicity of the interior shall have been softened beneath the plow, Nantucket will look a good deal like the rest of the world. To-day, when one turns his back upon the shore, it seems unique; and to an eye which can appreciate a landscape where almost all the conventional attributes of "natural beauty" are wanting, it seems uniquely attractive—or perhaps a better word would be, impressive. A splendid sky and the breath of a tearing wind tell us of the splendid sea, even when it lies out of sight. Seldom in civilized regions are we swayed by such a sense of breadth, vastness, freedom and the spontaneous action of elemental forces. Seldom do we see such beauty of color created with factors of such simplicity. And everywhere under our feet is the wide carpet of flowers and herbage in endless variety, in perpetual harmony and loveliness. The mainland is more picturesque; Montauk is grander; Block Island is more singular in surface conformation. But nowhere else on our coast is there so broad an expanse of uncultivated land, so simple as regards large features, so varied as regards those of minor size, so impressive in a general view, so interesting to the eye of minute examination.

M. G. van Rensselaer.

New York.

"The practice of leveling the surface has done much mischief both in park and pleasure ground. . . . When from any circumstance spare earth is to be disposed of in the pleasure ground, it is usually applied to the filling up of any hollows that may fortunately exist; whereas it should generally be used to increase any indications of undulating forms, as even the smallest variety of this kind is highly advantageous. It will be safer for the unpracticed eye to increase the existing varieties of the ground rather than to create new ones, the arrangement of earth for this latter purpose being an operation of considerable difficulty; whereas a moderate degree of caution cannot well fail in the former."—[W. S. Gilpin's "Practical Hints on Landscape Gardening," London, 1832.]

"Wherever Nature has herself glorified a country and made a picture bounded only by the horizon, as in many parts of Switzerland, Italy, Southern Germany, and even our own Silesia, I am strongly of the opinion that park-works are superfluous. It seems to me like painting a petty landscape in one corner of a beautiful Claude Lorraine. In such places we should content ourselves with laying out good roads to make the fine points more accessible, and here and there the cutting of a few trees to open vistas which nature has left closed. Around the house, however, we want a pleasant garden in a limited space and in contrast with the surrounding country. In such a garden we no longer seek the variety of nature, but rather convenience, agreeableness and beauty."—[Puckler-Muskau, 1834.]

Foreign Correspondence.

London Letter.

WE are now fairly advanced into mellow autumn, and the atmosphere of the horticultural world here is more than usually fruity. Little is talked about in matters horticultural except fruits. One hears of fruit-growing companies to be started and of fruit-growers' associations, while fruit conferences and fruit exhibitions are common in London and the provinces. We seem to have suddenly become aware that England is pre-eminently a fruit-growing land; that we have wasted millions in buying fruit from the foreigner; that thousands of men have lost, or rather neglected, opportunities in making bulky fortunes by fruit culture for market. Some enthusiasts go so far as to say that fruit-growing for profit is the only panacea for the depressed state of the farming interests in this country. Mr. Gladstone and other great men have pronounced in favor of extended fruit-farming, but even this does not appear to excite the stolid nature of the British farmer, who smiles mildly at the new "fads," and keeps on growing corn and meat as his fathers did before him. "Why allow Americans to send us the best Apples that the markets can supply, when we can grow fruit as fine as theirs?" This is one of the stock phrases of the promoters of fruit-growing companies, so that if anything really solid results from all the present excitement about fruit-farming, it will be a straight hit at Americans, who have taught us how to grow, how to select and how to pack Apples in order to reach our markets in as fine a condition almost as if just gathered from the trees. But Americans have nothing to fear from this passing fruit talk, at least for many years to come. It does very well to fill in a quiet interval, for nothing serious, I fear, will result from it, and when, next month, gardeners and others are engrossed in their Chrysanthemums, we shall hear little of fruit-farming except from the few who have real interests in the movement. The companies just started for fruit-farming are evidently believed in, for the Rothschilds and other great people have taken shares in them freely.

There previously had been some minor fruit exhibitions and conferences held at the Crystal Palace and other places, but the chief event in this way is now taking place in the garden of the Royal Horticultural Society at Chiswick. During all this week there has been a great gathering of those interested in fruit, fruit-nurserymen and private gardeners chiefly, very few actual fruit-growers for market. There is a very large exhibition of Apples and Pears, numbering over 5,000 dishes, the bulk of them very fine fruits, from all parts of England and Scotland. But you see there only a repetition of the large exhibition of Apples in 1883. The same collections of fifty sorts and so on; very fine examples, no doubt, of very fine varieties, but that is all. There is a great ado made about correct nomenclature, as it is loftily called, and little wrangles among gardeners about the proper names of such and such a variety are not infrequent. I will not attempt to detail the exhibition, as I know it would be of little interest to your readers. It is nothing but an exhibition, a fine show of the leading sorts of Apples grown by English gardeners for the gentleman's kitchen and table. I did not see one collection of sorts grown exclusively for market. There was not one exhibitor who sent a half a dozen sorts, and said: "These sorts are, in my opinion, the best to grow for the market. I live in Sussex; my soil is a deep loam resting on gravel; the situation is exposed and high, not subject to late frost." This is the kind of information that would be really useful, for you would get the opinion of a practical man from a given locality, and we should see the sorts he has selected as suited to his particular market. The same could be done in the case of selections for private gardens, which must necessarily be larger. It is acknowledged that we have far too many sorts of Apples; the lists of every large fruit-nurseryman are quite bewildering to the amateur who wishes to select a few of the best. What we

want to know is the process by which Americans found out that the Baldwin, the Newtown Pippin and other standard American Apples were the best for the market, and then see if we cannot find a selection to equal yours. I frequently have to make selections of fruits for new gardens, and I have sometimes been asked to plant nothing but American sorts of Apples, for "You know," say my clients, "there is no English Apple to come up to a Newtown Pippin or Baldwin," and it is hard to tell them that Apples cannot be grown in this country in such perfection as they can in the United States.

The papers read at the Chiswick Conference took a

New or Little Known Plants.

Rosa Nutkana.*

THE most showy of our western Roses, as well as the most clearly defined, with the exception of the delicate *Rosa gymnocarpa*, is the Nutka Rose. It has the largest flowers and the largest fruit of any of our species, and its armature is liable to become on occasion the most formidable.

It is frequent along the Pacific coast from the Alaskan peninsula to the Columbia River, where it was first collected by Menzies upon Vancouver's visit to that region,



Fig. 70.—*Rosa Nutkana*.

more practical turn than the exhibition, and some sound information was conveyed in them, as also in the discussions that followed the reading of each. All these papers will be collated in book-form and published by the Society, and which reminds me of the thorough way in which the reports of your leading horticultural societies are carried out. Let us hope that this present effort to establish fruit-farming in these islands will take root, and tend to make us more of a fruit-eating nation than we are at present. I was told the other day, by an American who has resided in England, that an American eats ten times as much fruit as an Englishman.

W. Goldring.

London, October 20th, 1888.

and somewhat later by Haenke at Nutka Sound. It ranges eastward from the coast through the mountains near the boundary to north-western Montana, and thence southward into Utah. It is rather stout in its habit, and with rather broad foliage, very rarely nearly spineless, usually armed with broad, flat spines at the base of the leaves, and occasionally, especially the young shoots, with scattered prickles. The spines are either straight or recurved, and sometimes they become larger even than they are represented in our figure, and very numerous. As usual in our Roses, the pubescence is very variable, the leaves being either per-

* *ROSA NUTKANA*, Presl, *Epimel. Bot.*, 203; Watson, *Proc. Am. Acad.*, xx. 341.

fectly glabrous and bright green, or softly pubescent, and very frequently resinous-puberulent, in which case, as in other species, the teeth are usually also glandular-serrulate. The inflorescence is ordinarily wholly smooth, hispidness occurring but rarely on either the pedicels or any part of the flower. As in all the other species of that region, in distinction from most of those of the Rocky Mountains and the East, the sepals never have lateral appendages or lobes. The fruit is globose or somewhat depressed, of a bright scarlet, and often over half an inch in diameter.

Our figure has been drawn by Mr. Faxon from a plant grown at the Arnold Arboretum. S. W.

Cultural Department.

Vegetables in Frames.

AMONG the vegetables now in frames are Lettuces, Radishes, Parsley, Endive, Chives, Spinach, Dandelions and Sorrel. All frames containing these should occupy warm, sheltered places, with a full sunny exposure, and be so situated that snow or rain-water will readily run away from, rather than lodge about, them. The more sunny and sheltered the exposure, the better will the vegetables thrive and the less covering will they need to exclude frost. See that the frames are in good repair; that all parts fit properly and snugly; that no openings are left at the ends of the rafters or elsewhere in the frames for the searching winds of winter to find. And see that the sashes are well glazed. If they are not perfectly water-tight, take a sash-brush and some thick white paint and run along the sash-bars, so as to close up any apertures by the edges of the glass through which water may drip. Have the frames well banked around with earth or coal-ashes, or if you use manure or leaves, lay a board on top of these to keep them dry.

While it is well to have the ground in which these frame crops are growing moderately moist, it should not be kept soaking wet, as must be the case where frames have been left open to the recent incessant rains. Therefore put on the sashes in the event of wet or snowy weather, keeping them tilted up to afford abundant ventilation. When frosty weather comes the sashes may be shut down, for, while it is unwise to keep vegetables in frames close and warm, freezing them does them no good, and hard frost hurts them. Store-vegetables—like young Lettuces that are being kept for transplanting later into hot-beds—should not be protected from light frosts, for the hardier they are, the better they will keep till required for transplanting.

The best covering we can have for frames is straw mats and light wooden shutters. These mats are made of long, flail-threshed rye-straw and marline, and of a length and breadth to suit. We make ours four feet wide, seven feet long and three-quarters of an inch thick, running five times lengthwise with marline. So long as these mats are kept perfectly dry they are a capital protection against frost, but if wet, frost soon finds its way through them. Under light wooden shutters they can be kept quite dry, and two mats thick and a shutter over them is good enough protection in a sunny place against twenty-five degrees of frost. There is a current idea that a heavy shutter is a better protection against frost than a light one, but this is contrary to my experience. I like light wooden shutters, of half or five-eighths inch pine stock, tongued and grooved, and put together in white lead; or, if the stock is thoroughly dry and well seasoned when the shutters are being made, and the boards are put together as tight-fitting as possible, they will swell and become perfectly water-tight in damp, wintry weather. Three feet wide and seven feet long is a convenient size for use and to handle. Besides mats and shutters, we also use a good deal of sea-thatch for covering up our frames in winter.

It is now generally conceded that for Lettuces, Radishes and other vegetables which we wish to gather every day or two in winter, frames are but a clumsy device, and the alert market gardeners who supply New York City with winter salads are fully awake to this fact. In the neighborhood of Springfield, Jamaica and other parts of Queens County, the truck gardeners have abandoned the use of frames for winter salads and vegetables, and, instead, have erected large ranges of low roofed green-houses, in which they grow their crops with so much certainty and so little trouble, that they are not only able to hold their own against competition with the South, but they regard their green-house winter crops as the most profitable part of their gardening. Progressive florists,

too, are using cool green-houses instead of frames, and they would not do this if it did not pay them. One large grower here is most emphatic in his opinion of the advantage and profit of green-houses over frames for winter work, and the multitude of frames he has cleared away recently, and the multitude of green-houses he has built in their places, is pretty clear proof of his confidence in houses. The vast amount of labor expended in covering and uncovering frames almost every day, the expense of the materials used as coverings, the very much greater wear and tear of frames than of green-houses, the inconvenience of cropping and gathering in midwinter, and the risk of losing a crop by close confinement in a long period of severe cold weather, are disadvantages well understood by practical men. No wonder, then, that the market gardeners and florists, whose bread depends upon their crops, are, on account of keen competition, obliged to give up the laborious, vexatious and unsatisfactory winter-frame for the green-house.

Glen Cove, N. Y.

William Falconer.

Notes from an Amateur's Garden.

THE horticultural experiences of amateurs have usually very little interest for professional florists, who work under different conditions and with different objects. To other amateurs they may, however, be acceptable, even if somewhat trivial in character. From this point of view I offer some brief notices—fruits of my own experience.

Incarvillea Olga.—This plant was introduced from Turkestan by Dr. Regel, and has been much lauded by dealers. In this climate it is perfectly worthless. The flowers have a rose color and come out in slow succession, one opening after another has fallen. As flowers they do not compare for one moment with good Antirrhinums, far less with even ordinary Pentstemons. The plant is hardy here in Newport; its leaves are fine both in color and form, but its habit is bad, as it is not distinctly a vine but yet requires support. The sooner it disappears from the catalogues, the better. Possibly it might yield a valuable hybrid with *Tecoma radicans*.

Montbretia crocosmiæflora.—I find that this fine hybrid bulb is hardy in the light soil of my garden when well protected with leaves or straw. On comparing plants from four bulbs which had been kept all winter in sand in a cold-frame and well covered with leaves, with others which had been left in the open ground but protected as above, I could find no appreciable difference. The horticultural world owes Mr. Lemoine a debt of warm gratitude for the creation of this beautiful plant. Of the seedling varieties which I have seen, Gere d'Or is the finest, a fine, clear yellow replacing the rich vermilion-red of the parent flower. Then the plants yield seeds in the greatest abundance, though they do not always ripen well in our long, cold autumns.

Tritonia aurea.—This beautiful plant has not been rendered superfluous by the introduction of its hybrid progeny. It is not hardy here even with protection, but goes through the winter extremely well when taken up late in October, covered with dry sand, placed in a cold-frame and then covered well with leaves. It may be transplanted to the open border in May, by which time it will have made long, green shoots in abundance. It flowers profusely and for a long time. The other parent of Lemoine's hybrid, *Montbretia Pottsi*, goes through the winter here in the open ground when well covered with leaves. It is pretty, but I think not worth cultivation.

Lemoine's Hybrid Gladioli.—These also are perfectly hardy here when well protected with leaves or straw. My finest plants were grown in a mixture of pure sand and pure leaf mould without manure of any kind. Many stalks were five feet in height. I have begun to hybridize them with *G. Saundersii*, and hope in due time to communicate my results.

Hybrids between *G. Saundersii* and various forms of *G. Gandavensis* were some years ago produced by Mr. Max Leichtlin, but they have never, so far as I am aware, been offered for sale. Of quite a number which I received from Mr. Leichtlin, all but one gradually sickened and died. The one which remains, closely resembles the parent, *G. Saundersii*, but the petals are not reflexed. The flower is very large and fine, nearly or quite four inches from tip to tip of the expanded petals. It has recently been stated in the *London Garden* that these hybrids have also been taken up by Mr. Lemoine, and Mr. Leichtlin's name is not mentioned in connection with them.

Zephyranthes candida.—This very charming and desirable bulb is well known and requires no description in this place. The bulbs do not ripen in our cool autumn, but the plant remains fresh and green till far into November. I find that it

is only necessary to take up the clumps of green leaves and new bulbs, cover them well with sand and put them into a cold-frame well filled up afterward with leaves. In the spring the clumps are almost as fresh and green as when first put into the frame. Transplanted to the open border, they grow freely, and produce their pure white, lily-like flowers in great abundance from about the middle of August until they are again taken up, unless cut down by frost. Few bulbs make so many offsets. Clumps of *Zephyranthes candida* interspersed with *Colchicums* make very attractive beds. In the absence of other bulbs the clumps should be planted quite near each other, so that the fine green foliage may completely cover the ground.

Newport, R. I., October 20th.

W. G.

Shall We Plant in Fall or in Spring?

THE proper season for planting trees and vines is a question on which people differ materially, some insisting that the fall is the very best time, and others advocate the spring with equal vehemence. Experience leads me to believe that the condition of soil and the subject to be planted has more to do with results than the particular season at which the work is done. Much of the loss is directly traceable to the treatment which the trees or plants receive during the interval from the time of their removal from the nursery until they are planted. I have seen evergreens lying on the ground during the noon hour, with roots exposed to the rays of a blazing sun and drying winds, and I have too often seen choice trees and plants similarly exposed while the so-called gardener was getting ready to set them. No wonder failure follows such treatment. In fact, Evergreens thus exposed had better be thrown on the brush-pile at once, to save the labor of setting and the vexation at the certain loss. The roots of trees and plants of all kinds should be exposed as little as possible and never allowed to become dry. This is especially true of trees and plants having fine fibrous roots, which soon wither and die of exposure in a dry atmosphere; fleshy and woody roots are not as susceptible, and will endure more exposure with less apparent injury.

Another serious cause of failure is the digging of trees and vines before the wood is sufficiently matured. Nurserymen anxious to commence operations in the fall sometimes yield to the importunities of customers and dig trees before the leaves have fallen, in which case they are generally stripped off by hand, entailing extra work. Such trees, especially Peach trees, are often killed if exposed during the winter. For this reason I prefer spring planting for the Peach, unless the trees can be dug and planted late in the fall, after they have fully matured. Fall planting, then, is quite as safe. Spring is, also, the best season for planting evergreens. It is well, in fall planting of trees or even vines, to raise a mound of earth about the trunk, and mulch with a little coarse manure. This course is especially applicable to vines or small plants with superficial roots, for these are much more apt to be lifted out by the action of the frost. The earthing up turns the rain and snow-water away from them, and on ground infested with mice it is a good protection against their attacks. The soluble portion of the manure finds its way to the roots, while the manure itself is a safeguard against the piercing winds and severe cold. This mound of earth should be leveled down in spring, and the manure replaced around the stem of the plant, to serve as a mulch, and keep the ground cool and moist.

This earthing up process is also a good support to the tree in preventing its being swayed about by the winds, although to keep trees erect till established they should be staked and tied. Another advantage of planting in autumn is that there is then less hurry and rush than there is in spring. The ground also can be worked in the fall into a condition not possible to reach in spring, because if it is so wet as to become packed and hard the action of the frost will disintegrate it, while soil in the same condition, and worked in spring, will not become mellow at all during summer. Wet and unfavorable weather in springs such as the last interferes with and often prevents contemplated planting, and hence it must go over till another season, and a year is lost, while if done in the fall a year is gained. Fall is the best season for purchasing, even if the stock is not planted, because, while the assortment is unbroken, the purchaser stands a much better chance of getting the varieties he wants.

In heeling in trees to be kept over for spring planting some sheltered spot should be chosen and care should be taken that the earth is well settled about the roots, leaving no air spaces. If any danger of injury threatens, a few evergreen boughs against the tops will greatly add to the security of the trees.

The careful planter will take but few trees or plants at a time from the package, keeping their roots covered from sun and wind till the last one is in the ground. With due precautions in what may seem unimportant details, the percentage of failures would be hardly worth notice, let the work be done in autumn or spring. The anxiety and desire for quick results as an atonement for past neglect often induces the planter to get extra-sized trees, but unless such trees have been frequently transplanted and are well supplied with fine roots, time is never gained, and trees are often lost. The inexperienced and impatient are slow to learn this fact.

Montclair, N. J.

E. Williams.

Nerine Fothergilli.—This is a gorgeous bulbous plant, and one that requires but a small amount of care and attention, while the fact of its flowering at this season, when so many summer-blooming plants are on the wane, is an additional merit. Many people fail to flower it in a satisfactory manner, but year after year at Baron Schroeder's it is, during the autumn, one of the most conspicuous features. One great cause of failure in the cultivation of these plants is that many people dry them off after flowering; whereas they really make their growth during the winter and early spring, and require all the light they can have at that season, instead of being placed underneath the stage in the vain hope of inducing them to go to rest. Where the plants are in good condition the beautiful, bright, rich vermilion-colored flowers will be now at their best, while the glaucous foliage is also effective. Besides the rich coloring of the blooms, they appear overspread with a lustre like frosted gold, which is remarkably striking. The soil best suited for this *Nerine* is good, fibrous, rather heavy loam, with a little leaf-mould and a liberal admixture of silver sand. These plants dislike being disturbed at the roots, so that they should not be potted unless it is absolutely necessary. Thorough drainage is essential to their well-doing. In the case of plants that are now flowering, they should, when the blooms are over, be still kept in the greenhouse in as light a position as possible, where they may be allowed to stand till about next May, by which time they will be in quite a dormant condition. If they have been well exposed to the light, the bulbs will be plump and hard. Then a very good plan is to turn them out-of-doors and stand them where they will be fully exposed to the sun, such as at the foot of a south wall or in a narrow border in front of a glass structure. Wherever they are put, care must be taken that worms do not enter the pots, for they will play great havoc with the plants, not only destroying the drainage, but also making the soil in such a state that it is absolutely necessary to repot, and this considerably lessens the chance of the bulbs flowering. If they are roasted up in a sunny spot, and only watered about once a fortnight, they will by about the end of July commence to push up their flower-spikes, when they should be taken into the greenhouse or a cold-frame, and those that are showing flower must be from that time watered when necessary. If the spikes are not visible the plants are better if kept dry for a little longer, and if watered too freely before the blooms are seen, a large crop of leaves often results at the expense of the flower. The major variety of *Nerine Fothergilli* is the largest and most imposing of the genus, but all are very beautiful, and well worthy of a little special care and attention.—*The London Garden.*

Soil for Roses.—If not already attended to, it should be borne in mind that a good supply of soil will be necessary for next year's operations in the Rose houses, and that now is the time to secure it, for when stacked up at this season and allowed to remain until needed for use next June or July, it will be found in the best condition for working. The soil, for this purpose, should be a good loam of medium consistency, such as is usually found in an old pasture, from which a layer may be taken about as thick as a spade will cut, including the sod. By medium consistency is meant a loam, not very sandy, nor yet entirely composed of clay. When it is too stiff it requires more preparation to fit it for successful Rose culture, and, also, more careful applications of water and of fertilizers. The sod for this supply should be stacked up in a neat pile, about four feet in height, with some good, short stable manure, in the proportion of one load to six of sod, the latter being placed grass side down, so as to assist the process of disintegration. Rose-growers differ as to the best manure to use for this purpose; but probably a majority are in favor of using that composed of equal parts of horse and cow manure, besides which, many add a small proportion of good bone-meal to the compost, before taking it into the Rose houses.

In some of our large cities, where florists have no sod at command, they resort to somewhat different methods, for while their compost heap may be similarly constructed, they also utilize their old soil by seeding it with grass, so as to prepare a sod for future use. This mode of procedure seems to have some disadvantages. One is, that it must necessarily take a considerable time for this partially exhausted or soured soil to regain its former good qualities; a second and more serious one is, that when the old soil has been taken out of a house infested with the Rose bug (*Aramigus Fulleri*), there is some danger of increasing and perpetuating this formidable pest, from the fact that it has not been positively demonstrated that its larvæ are destroyed by frost, and, therefore, it would seem to be decidedly the safest plan to use only new soil for the Rose bed.

Some experiments have been made to test the hardiness of the Rose bug, but, so far, the result has not been conclusive, and it is understood that further experiments will be made during the coming winter, so that another year will furnish us with more definite knowledge on this point. W.

Philadelphia.

Out-Door Roses.—An Indiana correspondent writes about these as follows: Mrs. John Laing is really a very fine Rose, equal to American Beauty in the number of blossoms it bears,

of a pallid blue. The flower stalk is two feet long and bears from fifteen to twenty flowers. *Vanda Sanderiana* wears a different appearance, having fine, bold flowers from four to five inches in diameter, which last in bloom about six weeks. Cypripediums are out now in great force; the most beautiful at present in bloom are the following: *Cypripedium Parishii*, *C. Stonei*, *C. calophyllum*, *C. tonsum*, *C. Harrisianum*, *C. Fairricianum*, *C. Spicerianum*, *C. Haynaldianum*, *C. marmorophyllum*, *C. Sedeni*, *C. vexillarium*, *C. conchiferum*, *C. purpuratum* (Kimball's variety); *C. Sedeni candidulum*, *C. Roetzlii*, *C. Lawrenceanum*, *C. obscurum*. *C. Spicerianum* I consider the most beautiful of the lot and the most useful, though *C. vexillarium* is a great favorite of mine, and if it were more abundant, it would make a spirited rivalry for the first place. *C. Fairricianum* is a little gem and worth more than its weight in gold, not more than six being in this country. *Renanthera Lowii* (or *Vanda Lowii*), a very rare Orchid, is now in bloom, its long flower spike holding from forty to sixty blooms. This is a remarkable plant, having two dissimilar forms of flower on the same spike—that is, the two flowers at the base of the spike are of a different color from that of the others—which strange contrast gives it a distinct value.

There are a great many other Orchids in bloom in the way of Cattleyas, Epidendrums, Oncidiums, Zygopetalums, Pleiones, or Indian Crocus, Dendrobiums, and



Fig. 71.—*Spiræa trilobata*.—See page 453.

and the average is better in quality. American Beauty is very fine, if budded, but does not succeed with me on its own roots. Lady Helen Stewart and Earl Dufferin have the merit of growing well, but neither of them blossomed with me this season, although they were large plants when set out last spring.

Folkstone comes nearer to La France, as a bedder, than any other hybrid Tea; I like it very much. Puritan, as a failure, is fully equal to Her Majesty. I have tried it now for the second season, and have not yet had one perfect Rose from it. I did not get one perfect bloom on Her Majesty in three years. Nearly all Roses do better for me if budded—that is, if they are budded low, say within three inches of the crown of roots. I have just finished planting fifty newly purchased kinds, most of them being budded; but in more than half of them the bud was at least six inches above the root. As I always, in planting, set the bud three or four inches below the surface of the ground, it will be almost impossible to set the roots of these in good soil.

Orchid Notes.—The most beautiful in bloom now, as the season opens, is *Vanda carulea*, with erect scapes, and flowers

quite a number of botanical curiosities that are very pretty.

Oncidium iridifolium is one of the smallest and also one of the rarest; a beautiful dwarf, about two inches in height, resembling a small Iris in growth, with bright, large, yellow flowers.

Rochester, N. Y., October 30th.

Geo. Savage.

Two Beautiful Stove Bulbs have been in flower lately in the Palm house at Kew, and both deserve attention in private gardens. One is the Ceylon Crinum (*C. Zeylanicum*), a robust looking plant, with a big bulb and long channeled leaves. Its stout flower-stem bears about half a dozen lovely blossoms, with the white petals having a broad crimson band running down the middle of each. Being large, the cluster is very showy, and lasts a long time before fading. The other bulb is *Pancratium speciosum*, than which no flower could be more lovely or more fragrant. It is also a large plant, with broad, luxuriant-looking, evergreen leaves. The flower clusters rise above the foliage, each stem bearing several snow-white blossoms, with long, narrow petals and a web-like cup in the centre. Both plants are easily grown in a

stove, and may be readily obtained from nurseries. It is a pity that plants like these, possessing such wondrous flower-beauty, should be neglected for the sake of novelties not half so beautiful.—*The London Garden.*

Plant Notes.

Spiræa trilobata.

Spiræa trilobata, of which a flowering branch appears in our illustration on page 452 of this issue, has been cultivated in gardens since the very first years of the century. When the graceful, pendulous branches which sweep the ground are wreathed in early June with their clusters of white flowers, few plants are more beautiful or more generally admired. It is a wide-spreading, open bush, which is rarely more than three or four feet high; and it is one of the very best shrubs which can be used on the margins of a shrubbery to connect taller plants with the grass of the lawn.

Spiræa trilobata is a widely distributed plant, being found in Turkestan, Siberia, Mongolia and northern China. It is one of the very few plants which will not be out of place in any collection of shrubs, or in any garden.

Notes from the Arnold Arboretum.

THE most beautiful plant now in this collection, so far as its fruit is concerned, is *Lycium Chinense*, a Chinese species with semi-prostrate or vine-like branches, eight or ten feet long. From these spring, at nearly right angles, rigid, lateral branches, one or two feet long, and these are fairly loaded with bright scarlet, oblong fruits, about half an inch long, contrasting finely with the leaves, which are still bright green and shining. The end of each main branch is, as it were, a broad and leafy raceme, two or three feet long, of brilliant fruit. The fruit and the leaves remain upon this plant until destroyed by really hard freezing. Among fruits which are ornamental at this season of the year should be mentioned forms of one of the Asiatic Apples, *Pyrus prunifolia*, one of the parents, most authors affirm, of the so-called Siberian Crabs. The fruit of *Pyrus prunifolia* is golden yellow on some plants, and bright scarlet upon others. It is an inch or two in diameter, and hangs upon the branches long after the leaves have fallen, retaining its form and its brilliant colors well into the winter. This species, or its varieties—for the so-called ornamental Apples are so changed by long cultivation, and perhaps by the crossing of the different species and varieties, that it is rarely possible to find exactly the wild type of any of them—is far more ornamental in fruit than the more commonly cultivated varieties of *P. baccata*, the fruit of which, distinguished by the deciduous calyx, is smaller, and less persistent upon the branches. The foliage of the Asiatic Apples falls early and without change of color, so that it is for their flowers rather than for autumn effects that these plants are really valuable. But one of the Asiatic Pears, *Pyrus Sinensis*, often known as the Sand Pear, is not surpassed by any other tree in the deep rich scarlet and purple tones of its autumn leaves. This is a plant of excellent habit and rapid growth; it is beautiful when in flower; the fruit has considerable value for culinary purposes, and the leaves turn more beautifully in the autumn than those of any other fruit-tree which I can now recall. It is a tree, therefore, which might well be seen in gardens more generally than it is at present. Another eastern Asia Pear, *P. betulifolia*, loses its silvery white leaves early, and without any change of color.

Few *Spiræas* are valuable on account of the colors of their autumn foliage. Many of the species, especially the European and Siberian, lose their leaves early; but *S. prunifolia*, of which only the double flowered variety is known to botanists or in gardens, one of the least attractive of the entire genus, both in habit and in its flowers, is now beautiful in the brilliant orange and scarlet of its autumn dress. *Spiræa Thunbergii* is still green, but its leaves will turn to rich colors at the end of another week or two. This is almost the very latest to change of the shrubs which take on bright autumn colors, just as it is one of the very earliest of all shrubs to put forth its leaves in the spring, and among the earliest to flower. Few shrubs, all things considered, are more beautiful than this Japanese *Spiræa*, and few can boast of more good qualities. Here its only fault is found in the fact that the ends of the branches are sometimes killed back in severe winters.

Among European shrubs, none assume such attractive colors in autumn as do some forms of the common Spindle tree (*Euonymus Europæus*), although in the richness, or, rather, in the depth of its autumn tints, their American con-

gener (*E. atropurpureus*) surpasses them. Much more beautiful, however, than either the European or the American species in this respect, is the Japanese *E. alata*. Forms of this plant vary here; but there is one in the collection upon which the leaves assume in autumn a clear, rose-pink color, which resembles that of no other plant I can recall, and which makes it one of the most interesting shrubs that can be grown, wherever attention is paid in planting to autumnal effects. The fruit, however, is small, and not to be compared in brilliancy or in beauty with that of the European plants, which are conspicuous objects in the shrubbery through the autumn and early winter months.

We spoke, when the plants were in flower, of the beauty of a Japanese Cherry, *Prunus Pseudo Cerasus*. Its value as an ornamental plant is heightened by the fact that its leaves turn at this season here to orange and scarlet. Among small trees of comparatively recent introduction into our gardens not one gives better promise of real ornamental value. A feeble growth and not particularly good habit are the only drawbacks in this plant, and these are compensated for by its abundant flowers and handsome foliage.

The Japanese Maples are certainly at their best in the autumn, when the colors which some species take on are almost unsurpassed. On the whole, Japanese Maples cannot be considered a great success in cultivation here. Occasionally a fairly good specimen of *Acer polymorphum* or *Acer Japonicum* may be seen, but none of the race seem possessed of very robust constitution, and all of them, although hardy enough as regards cold, are apt to perish suddenly, or branch by branch, without any apparent cause, during the summer. The nearer the plants approach the types of the species, the more satisfactory they seem to be, and the green-leaved and the purple-leaved *A. polymorphum* are more reliable here than any of the abnormal forms of this species, and of *A. Japonicum*, which Japanese gardeners have been collecting and perpetuating for centuries. But Japanese Maples are such really beautiful objects at this season of the year, that one is tempted to recommend their more general use in gardens, in spite of all the disappointments which have followed their cultivation, and of the miserable sun-burned appearance many of the varieties present before the autumn kindles their color into a blaze. A week of such beauty may well compensate for many disappointments.

Few Maples turn more beautifully than the shrub-like Manchurian form of *Acer Tartaricum*, which is sometimes known as *Acer Ginnala*; but it has the serious defect of losing its leaves early and before most other plants have made their finest autumn show.

There is great difference in the behavior of the various species of Lilac in autumn. The leaves of the common Lilac never change color at all, but remain green until very late and then turn black and fall. The Persian Lilac behaves in the same way, while the leaves of *S. Chinensis* turn to a pale yellow, without beauty. The leaves of *S. Japonica* and *S. Amurensis* fall early in October and without changing color, and this is certainly a defect in these plants as garden ornaments. *S. villosa* behaves in the same way, although the leaves persist a few days longer than upon the two species just referred to. The leaves of *S. Pekinensis* remain much later upon the plant, and then turn a light, but not very clear yellow. The leathery leaves of *S. oblata*, the only Lilac worth consideration for the autumn coloring of its foliage, are still green. A little later they will turn to a deep rich claret color of unsurpassed beauty.

Female plants of the Black Alder, *Ilex (Prinos) verticillata*, are now conspicuous objects, covered with their bright red fruits. There is a plant in this collection with yellow fruit, but this is less showy than the common forms, and hardly worth cultivating except as a curiosity. The leaves of the Black Alder turn black before they fall, and without any previous change of color, while on an allied and comparatively rare species, *Ilex lavigata*, which may be most readily distinguished by its stalked fruit, the autumn coloring of the leaves is bright yellow. These two Hollies are well worth general cultivation for the beauty of their fruits. They will thrive, although swamp plants, in any ordinary garden soil.

Some of our native Viburnums are worthy of mention at this time. The most conspicuous, perhaps, although its foliage, having first turned orange and scarlet, has now nearly all gone, is the cosmopolitan *V. Opulus*, the most showy of the genus in fruit, which is large and bright red, remaining for many weeks upon the branches until devoured by birds, who seem to attack it only when other food becomes scarce. The broad and handsome leaves of *V. dentatum*, one of the most ornamental species of the genus in habit, foliage, flowers and

fruit, are now dark bronzy red upon the lower parts of the branches, while those nearer the ends are still green and lustrous. *V. nudum* and *V. cassinoides* are both beautiful in the autumn, their deep green leaves first shading into purple, and then turning to the color of claret wine. *V. Lentago* and *V. prunifolium* are handsome objects, too, at this season of the year, when their leaves have turned from bright green to orange and purple.

There is a great difference in the behavior of the different Roses in regard to the change of foliage. Most Old World species lose their leaves without any change of color at all. *Rosa rugosa* is an exception to this rule. *Rosa spinosissima*, the Scotch Rose, is another, although the colors which its leaves assume in the autumn are not very striking. The species which inhabit western North America lose their leaves without any change of color, while those peculiar to the eastern part of the continent change more or less brilliantly. *R. nitida* and *R. lucida* surpass them all, and there are few shrubs upon which the autumn foliage is more persistent or more beautiful than upon these two Roses. Masses of them, covered with ripe fruit, and fairly glowing with the deep tints of their leaves, are not surpassed just now in brilliancy by any plants in the Arboretum.

The foliage covering the long, wand-like branches of *Andromeda Mariana* is intensely scarlet, while that of *Leucothöe racemosa* is not less attractive, although a large proportion of green is still seen among the shades of red, which in a few days will make this one of the most beautiful of our native shrubs.

It is worth noting, perhaps, that the leaves of *Quercus dentata*, a species of eastern Asia, of much promise here as an ornamental tree, turn bright orange and scarlet, not a very common combination of autumn colors among Oaks; that while our North American Yellow-wood (*Cladastris tinctoria*) is a beautiful object in the autumn, from the bright, warm yellow of its leaves, the eastern Asia representative of this genus loses its leaves fully two weeks earlier without any change of color; and that among the Larches the most beautiful in autumn coloring is the Japanese *Larix leptolepis*, upon which the leaves are now a clear canary-yellow, and much brighter than those of either the American or the European species. The leaves of *Pseudolarix*, one of the hardiest and most beautiful of exotic Conifers, turn to a deep orange hue in the autumn. They fell from the trees, however, several days ago.

October 29th.*

7.

The Forest.

European Forest Management.

WE hear much reference to the excellent forest management prevailing in European countries, and on the other hand, the statement that the application of such management would be impracticable with us, and that we cannot learn much, if anything, from European practice. Both statements, I fear, are mostly made without definite knowledge of the subject and without proper consideration. It would be of interest, therefore, to briefly state what the principal features of European forest management are, and wherein its introduction is unsuitable to our conditions.

We shall have to discern between forest management by the state and by individual owners. The former, which attempts, and, to some extent, represents, an ideal forest management, is carried on upon considerations of the general welfare, of continuity and regularity in material supplies, and upon other considerations of national economy; while the private forest management, imitating mostly the methods of the state forester, works mainly for the highest profits, and only to a limited extent recognizes the desirability of a regular and continuous revenue from the forest. Of course forest management is differently developed in the various states and portions of the same state, according to the general development of the country and its local needs. While in north-eastern Prussia, where forest land abounds and population is not very dense, the management is more or less crude, in the western parts a careful and intensive working of the forest takes place. In general we may say that in Germany, and especially in Prussia, Bavaria and Saxony, the science of forestry is the most highly developed.

The essential features of a well regulated forest management, and the principles underlying European, especially German, state forestry, may be briefly stated as follows:

1. Forestry is regarded as much a business as agriculture; it means the growing of a wood crop.

2. A proper economy in a densely populated country requires that all the agriculturally valuable soil should be, as far as possible, turned to agricultural use; the wood crop is, therefore, the crop with which to utilize the poorer soils; agricultural lands devoted to forest growth are becoming a rarity.

3. A proper economy requires that every portion of the land be made productive; therefore, when the crop is utilized, a new crop is planted or its natural reproduction is secured.

4. Different timbers have a different capacity for reproducing themselves naturally; the natural reproduction is therefore either encouraged or artificially supplied; the reproduction is expected either by sprouts from the stump (coppice), which method is resorted to, however, only for the production of smaller sizes for fire-wood and tan-bark; or it is expected from the seed, when proper preparative cuttings in the old timber must be made, and after the young plants have come up, light and air must be gradually given them by removing the old growth; or, thirdly, after the old growth is removed (clearing) the new crop is sown or planted—generally the latter.

5. Mixed plantations, especially of Conifers, as dominant growth mixed with deciduous trees, have the preference, in planting, for various reasons which it would take too long to discuss here; experience has shown which are the proper mixtures, the rapidity of height-growth and the varying capacity of shade or light endurance possessed by the different trees being the criterion in their choice for mixture. Close planting is practiced, because the shading of the soil, which prevents evaporation, is of prime importance, and because in a close growth, within limits, the trees grow more rapidly in height, or, at least, straighter, forming clean boles, and are not so apt to spread into branches.

6. But few trees—not more than ten or twelve—are predominantly used in German forestry; Pine, Spruce, Fir, Beech and Oak, one species of each, being the principal ones. Contrary to statements made by various writers, the bulk of the German forests—probably fully two-thirds of them—consist of Conifers, and the planting mainly concerns itself with Pine and Spruce. Beech groves are usually reproduced by natural seeding, or more rarely by planting in bunches; Oak is introduced by sowing the acorns or by planting one to three-year-old plants on deeply cultivated plats; on better soils larger plants are used, and for tan-bark coppices often the roots alone are planted. For Pine, the rule is to clear small strips, followed by planting with one and two-year-old (not transplanted) seedlings, after cultivation with the plow and subsoil plow or simple preparation of the soil by the hoe. For the Spruce, also, clearing in moderately wide strips, with subsequent planting, is the rule; but sometimes the reproduction is by natural seeding. For planting Spruce, transplanted plants or else bunches of from three to six plants in a bunch are used—the latter method, however, is losing ground. Larches are planted only as single individuals in intermixture, never in pure growths or clumps, as when so planted, it has been observed that they fail and are apt to die early. The other woods are generally used in admixtures, but occasionally in pure growths on special sites, as, for instance, the Alder in overflowed swamps and the Birch on safety strips along railroads.

7. In the management of the crop, thinning out is the principal operation. Cultivation with the plow to subdue weeds, etc., is rarely resorted to. This thinning is done first when the crop is eight or ten years old, and is then periodically or annually repeated. Farmers get their fire-wood by these thinnings. The object of the thinning is to give more light to the crowns of the remaining trees, in order to stimulate diameter-growth after they have attained a good height-growth. The thinning must never be so severe that the soil is deprived of shade for any length of time. Sometimes when too many trees have been cut out, or under certain other circumstances, it becomes necessary to put in an undergrowth (underplanting) for the purpose of shading the soil; the cleaning out of undergrowth—shrubby; not weeds—practiced sometimes in this country, is a useless if not an injurious proceeding.

8. The annual crop is composed of the annual layers of wood which the trees form each year. As these cannot be harvested, an accumulation of many of them, that is to say, trees of proper size fit for use, are cut, while the younger ones remain to grow on. On large forest areas it is desirable to have annually, or at least periodically, the same amount of cut or revenue. In the state forests, therefore, and those of large estates, these amounts are as much as possible equalized from year to year, or at least from period to period. The ideal equalization may be conceived in this wise. Assuming that the most profitable growth is attained in 100 years, as

may be the case with a White Pine forest, and we have 1,000 acres under management, then we might cut every year ten acres of 100-year-old wood, or periodically during every period of ten years, 100 acres of such wood. After the forest has been brought under this kind of management (which theoretically would require 100 years, although in practice the process is much modified) we should then have a forest consisting of 100 sections of ten acres each, from one to 100 years old, each differing by one year of age, or if periodically treated, ten sections of 100 acres, each differing by an average age of ten years.

If reproduction from seed is expected, we might cull over even a larger area, making our periods longer. But this culling differs from that practiced in this country. Instead of taking out the best trees first, leaving the inferior or less valuable ones, the culling is done entirely with a view of securing a good new growth, and takes the inferior material first; the best trees are rather left to provide the seed and to gain in proportions, making the most valuable material after they are thus exposed to increased light influence, and they are removed only as the young after-growth requires. The adjustment is practically very much more complicated, since in the same forest area some timbers on certain soils will come to their best production earlier or later than the general period of rotation, assumed at 100 years. The small owner, of course, utilizes his crop when it is at the most profitable age financially, and this varies greatly in different localities; but he looks to its proper reproduction by cutting, so as to secure a vigorous young growth from natural seeding or sprouts, or by replanting after the clearing.

9. Neither the firing of the woods or the browsing of cattle in young growths is considered advantageous to the wood crop and strict regulations in this respect are enforced with good effect.

10. The age at which the crop is utilized differs greatly, according to the use to which it is put, the climate and soil on which it is grown and the kind of trees of which it is composed, and the need and profitableness of the market. The coppice is cut in rotations of ten to thirty years, sometimes even forty years; the longest rotations prevail in Alder and Birch forests in the eastern (colder) provinces. For Beech, which forms the most valuable dominant growth of broad-leaved trees, in the timber forest 90 to 120 years are required, the longer rotation in the mountainous localities and in the eastern (colder) provinces. For Pine and Spruce a rotation of from 60 to 120 years prevails (mostly 80 to 100 years), the longest period for the better soils of the eastern provinces, which are capable of producing good building timber. Alder and Birch in the timber forest will be cut in forty to sixty year rotation, and Oak, which is rarely found in pure or extensive growths, but is grown as prominent admixture, is kept over for 140 to 160 years; if "undergrown" in time, sometimes 120 years will produce the desirable sizes and qualities. For tan-bark coppice, it is cut in rotations of ten to fifteen years.

11. Coppice management is practiced in small wood lots and on thin soils, while in protective forests in high, exposed mountain districts a management of culling (or selection) is the rule. The State forests are, as much as possible, managed as timber forest, while small forest owners prefer a combination of timber forest and coppice called "middlewald," which we may render into "standard coppice." In some localities the communities or small owners practice a combination of forest growing and agriculture. After the forest is cut the ground is, for a few years, utilized for agricultural crops, before or even while being replanted to forest; and the economy of this system, with its good results, if properly carried on, will recommend it to our forest growing farmers.

If it is asked, "Is forest growing profitable in Europe?" the answer must be, "It depends;" it depends on what is called profitable and upon the situation. Considering that the European forests are now pretty nearly culled of all their virgin timber and are relegated to the poor soils and waste places, they are probably profitable enough investments.

The German forests, for which pretty reliable data are at hand, yield an annual net dividend of \$57,000,000 from 34,000,000 acres of forest reserve, being considered a three per cent. investment, the soil being valued at \$400,000,000 and the standing wood capital, from which the interest is drawn annually, at \$1,600,000,000. Over a million men find useful and steady occupation during part of the year, at least, and the soil is utilized to its best advantage, with security against the ills of disturbed climatic and hydrologic conditions. Surely, to the nation, forestry is profitable, whatever it may be to the single individual.

B. E. Fernow.

Washington, D. C.

Horticultural Exhibitions.

The New York Chrysanthemum Show.

THE experiment of holding this exhibition in a large tent has proved successful in furnishing a better and more evenly distributed light than that found in any of the halls which the New York Horticultural Society has used for the purpose in former years. Besides this, the plants and flowers retain their freshness longer under the cool and well ventilated tent than in the close, dry air of a hall. This is especially true of the cut Roses, which were displayed in considerable numbers and were of the best quality. All the standard varieties were exhibited by Mr. John N. May and Mr. J. H. Taylor, together with the newer favorites, like the Bride, American Beauty and Madame de Watteville.

The display of single cut Chrysanthemum blooms was much superior to anything of the kind ever seen in this city, and, perhaps, the fifty flowers shown by Wm. Tricker, gardener to Judge Benedict, of Staten Island, were the best that have ever been exhibited in this country. This collection was largely made up of American seedlings, many of them comparatively new, and after examining them one could well believe, with Mr. Robert Craig, that the best twelve American seedlings of last year were superior to the best twelve originated in England or France. Mr. Tricker's collection, which won the first prize in competition with another remarkably good one shown by Mr. J. H. Spalding, of Orange, New Jersey, gained much in popular interest from the fact that every flower was plainly labeled. Near these choice specimen blooms was a large collection of Chrysanthemums, cut with long stems and arranged in vases by Mr. John Henderson. They were not entered for competition, but they attracted much attention on account of their fine quality, and gave a striking illustration of what can be accomplished with good garden varieties under good garden cultivation only.

Among the cut flowers were many fine seedlings, but very few were sufficiently distinct to deserve mention as improvements on existing varieties. The beautiful silver cup offered by Mrs. Andrew Carnegie for the best American seedling, was properly awarded to a splendid variety named after her, and shown by Wm. Hamilton, of Allegheny City. The head is of great size, the upper side of the incurved florets being a very dark crimson, and the lower surface of the same color near the base, but turning to "old gold" at the tip. The stock of this plant is owned by Mr. John Thorpe, from whose collection Mr. Hamilton secured the seed. Another fine seedling is Mrs. Levi P. Morton, now owned by Mr. Robert Craig, of Philadelphia, but raised by Mr. Thomas Jones, of Short Hills. It is rosy pink with an open centre and about nine inches in diameter. The florets are tubular at the base, and as they are white on the under side, a distinct zone of white surrounds the disc, which, together with the graceful arrangement of the slightly incurved rays, make a most attractive novelty.

Of the new Chrysanthemums of foreign origin, the one named Mrs. Alpheus Hardy excites the greatest interest. It is exhibited by Messrs. Pitcher & Manda, of Short Hills, New Jersey. It has somewhat changed from its form last year, the hair-like growths on the florets being more thickly set and downy than in the specimen from which the illustration in the first number of this journal was taken. The head seems frosted over with glittering white, and altogether in form and finish it is the most striking variation from old types of the Chrysanthemum that has been produced for years.

Very interesting, too, was a group of nine specimen blooms sent by E. Fewkes & Son, of Newton Highlands, Massachusetts. These varieties came from Japan in the same collection with Mrs. Alpheus Hardy, and they all have distinct merit. One of them, Kioto, is a fine yellow, belonging to the incurved section, but with florets whorled and coiled in a novel way. Medusa, another, has long white petals, so narrow that they can almost be called thread-like, which hang in a disheveled way that certainly is not beautiful. The value of this variety, however, lies in the fact that it is another break into a decidedly novel form, and it therefore gives promise of usefulness in originating a new and distinct strain when crossed with other varieties.

The specimen plants, particularly those which were tied and tortured into artificial shapes, were, as a rule, inferior. Only one or two of the so-called standards had any real beauty. The plants naturally grown, like the half dozen for which Mr. Thorpe received a prize, were altogether more attractive. Those plants, too, which were rooted in summer and carried a single bloom upon stems from one to two feet high, were particularly fine. Any one of them, of average merit, would have been considered a marvel five years ago.

Besides the exhibitors named above, Peter Henderson, Geo. Maclure, John Dallas, of Fairfield, Connecticut, and E. Asmus received prizes. A special prize for a group of Orchids, among which were fine specimens of *Catasetum Bungarothii* and *Cypripedium Spicerianum* was awarded to Messrs. Pitcher & Manda.

The Germantown Exhibition.

A MOST successful exhibition of Chrysanthemums was held in Germantown on the 8th and 9th instant, an ample fund for premiums having been provided by the patrons of horticulture residing there. Parker's Hall was crowded with plants of the best quality. As a rule, they were not so massive as those seen at the shows in Philadelphia, but they were all well grown. Michael Sammon, gardener to Mr. J. M. Shoemaker, contributed three plants, each of which measured four feet across and were perfect in every way. The varieties were Source d'Or, Duchess and Puritan, and the last named carried 450 expanded flowers. The collection of twelve plants, which took the first prize, consisted of General Anderson, Purple King, Shakspeare, Bend d'Or, Cullingfordi, Christmas Eve, Gloriosum, Mrs. G. W. Bullock, Duchess, Mrs. Frank Thompson, Dr. Sharpe and Tokio. They were shown by W. Beasley, gardener to Mr. Benjamin Homer, and they were remarkable for their perfect foliage from top to bottom, as well as for general good culture. Of the numerous seedlings, few, if any, could be considered improvements upon varieties already grown, but two unnamed ones deserve mention. One was in the fine collection of Robert Carey, gardener to Mr. Thos. C. Price, and the second was in that of John McCleary, gardener to Mr. W. Weightman. Both flowers belonged to the Japanese class, the first being pure white and the other yellow. For cut flowers, the first prize was awarded to Joseph Shaw, gardener to Mr. J. Campbell Harris. In the competition open to nurserymen and florists, the principal premiums were awarded to Thomas Meehan & Son and Woltemate Brothers.

J. M.

The Flower Show at Orange, New Jersey.

THE regular fall exhibition of the New Jersey Floricultural Society was held last week at the Rink in Orange, New Jersey, and, as usual, it was noteworthy for the excellent quality of the plants displayed. There was an abundance of Palms, Ferns, Crotons, Marantas, and the like, which were grouped with much taste and skill. The collection of Orchids from the nurseries of Messrs. Pitcher & Manda was unusually rich and varied, containing no less than fifty varieties of Cypripediums alone. The Chrysanthemums in all the classes were the best ever exhibited by the society. The plants trained as standards were commended by the judges as superior to any which have been shown this year. As this was the first exhibition this year of the Chrysanthemum, Mrs. Alpheus Hardy, the flower proved one of the chief attractions of the show and was constantly surrounded by enthusiastic admirers.

The principal prizes were taken by J. Crosby Brown, Geo. J. Ferry, William Barr, E. P. Wilbur, of South Bethlehem, Pennsylvania, Messrs. Pitcher & Manda and John N. May.

Some fine clusters of Niagara and Brighton Grapes were shown by E. & J. C. Williams, of Montclair, New Jersey.

Notes.

A forest fire raged for nearly three weeks in October among the mountains of Santa Clara and Santa Cruz Counties, California.

The proceedings of the Convention of the Society of American Florists, held in New York last August, have been promptly published, and make an instructive volume of nearly 200 pages.

We are sorry to say that the news has just come from St. Petersburg of the death, at Tashkend, of General Prejevalsky, the famous geographer and explorer of Central Asia, to whose proposed expedition into the heart of Tibet reference was made in these columns a few weeks ago.

Experiments at the Amherst College Station indicate that a wash of Portland cement, of the consistency of common paint, will adhere to the bark of young trees during winter, and when mixed with Paris green, will serve as a protection against mice.

Mr. John Thorpe states in *The American Garden* that out of 385 seedling Chrysanthemums raised by him this year, thirty-seven had bloomed before October 18th, and not a single one was worth keeping. The seeds were saved from the best varieties, and yet he can hardly expect five flowers of superior

quality, and will be satisfied if he secures a single one that is a real acquisition.

A curious development of *Lapageria alba* is noted in *The Garden*, of London. A large plant in the green-house at Arundel sent up this year a long shoot from the ground which terminated in a close, umbel-like cluster of more than twenty flowers. The same paper describes a Fig-tree of the Brown Turkey variety, growing at Kingdon Hall, which covers the wall to a height of eighteen feet, and extends fifty-four feet in a lateral direction. It annually bears and ripens a large crop of fruit.

The National Chrysanthemum Society of England has just issued a new catalogue—the third prepared under its direction. It forms a volume of sixty-five closely-printed pages, exclusive of the preface, and includes a historical account of the Chrysanthemum and its introduction into culture. About 2,000 species and varieties are named and described, although novelties of this year's introduction were excluded, as their title to be considered distinct varieties needs further establishment.

The late Professor Edward Tuckerman left a valuable collection of books and papers relating to Lichens to the library of Amherst College, where it will be kept separate from the other collections as a memorial of the donor. The librarian of the college, Mr. W. T. Fletcher, wishes it to be known that supplementary contributions to the collection will be welcomed. And he is in hopes that a fund may be secured to maintain it by additions and repairs. About \$1,000 would suffice for the purpose. Professor Tuckerman's collection of Lichens, unrivaled in North American species, and containing, of course, all his own types, has been acquired by Harvard College through the efforts of our associate, Professor Farlow.

At the Iowa Experiment Station some interesting observations have been made on the different varieties of Indian Corn, from which the conclusion is drawn that those which have a large number of blades on the points of the husks are the more fruitful, probably because this extra leaf surface enables them to assimilate a larger proportion of plant food. It also appears that the leaves of the various kinds show marked differences in the relative amount of chlorophyll-bearing tissues. Other things being equal, it is probable that the power and quality of the leaf for food assimilation depends upon the amount of available chlorophyll it contains, and therefore a microscopic examination of the leaf-structure of any variety will be a help in estimating its comparative value.

The trade in Christmas-trees and greens grows larger year by year. Thirty years ago a Christmas-tree was seldom seen except in some home of the richest class, and the adornment of churches for the festival season was confined to the Catholic and Episcopal denominations. But the immense increase of our German population has popularized the Christmas-tree throughout the length and breadth of the land; and with the waning of old Puritan ideas the decoration of churches of all denominations has become customary. The extent to which materials for these purposes are now required is shown by the fact that a single dealer in New England last year disposed of 10,000 Christmas-trees, 25,000 yards of wreathing and 800 barrels of evergreen spray. The smallest trees that are sold bring, on the ground, ten cents apiece, while the largest—twenty-five to thirty feet in height—bring from \$4 to \$6.

French papers have recently contained summaries of the report of the Minister of Agriculture, Monsieur Viette, upon his tour through the wine-producing departments of France. Of the departments of Hérault, Gard and the Gironde, he says that the flooding of vineyards has had admirable results, and that renewal of the vines by means of grafting upon American species as stocks has proved successful. Grafts of French vines upon American stock have the advantage, it is claimed, of ripening their fruit earlier, and of being more productive without loss of delicacy in the fruit. After long experiment the way has been discovered to renew a vineyard in three years, if the necessary preparations are made. In Hérault this has almost everywhere been accomplished, and in Gard it is rapidly progressing. Vines planted in sand cover wide expanses, and everywhere an excellent harvest is expected. Hérault, which produced seventy-five million gallons of wine last year, is expected this year to produce more than a hundred millions, while forty-five millions are anticipated from the Gironde. Mildew as well as the phylloxera is being successfully combated, and now, it is affirmed, the problem of viticulture has been mastered, from the cultivator's point of view. Economical questions alone remain for adjustment. A strict enforcement of the rules for the inspection of foreign wines on the frontier is recommended, as well as new regulations to control the manufacture of wine from grapes that are not fresh.

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A Novel Project for a Public Park.

THE Park Commissioners of the City of Buffalo, in this State, having been asked by the Common Council to consider the practicability of forming a park upon a given site south of the town, have obtained the opinion of Messrs. F. L. and J. C. Olmsted, landscape-architects, upon the question. This opinion, in the form of a pamphlet illustrated with small sketches and accompanied by a plan, gives a definite and remarkably original and interesting form to the project.

It is needless here to summarize the reasons given by the authors why Buffalo should have another park, or why the site in question should be selected. As they show, it is an extremely discouraging spot, from the ordinary landscape-gardening point of view, but it has certain distinctive advantages, and it seems to be proved that there is no better site available, and that a way to adapt this one can be found which will make it both useful and attractive.



The site borders upon Lake Erie and the unobstructed view of the water which it will offer is, of course, a fact of almost priceless value in its favor. It can be reached from the heart of the city by navigable water and by four lines of railroad already in operation. No buildings or cultivated grounds of importance exist to make its acquisition costly, nor is it fitted for agricultural use. But, on the other hand, the surface is quite flat over nine-tenths of its area, and shows no rocks, trees or other valuable natural features. It lies but little above the surface of the lake, and is, conse-

quently, half-swampy and liable to be submerged at seasons of high water. The gravel beach and low shifting sand dunes that edge the lake rest upon a stratum of black muck, which is constantly washed out, and thus the shore is rapidly wasting. And no facility for the landing of visitors from boats is supplied by nature.

Turning now to the plan, which we reproduce on page 463, we find that it is proposed not merely to conquer the natural disadvantages of the site, but actually to base the scheme upon them. The main tract, lying between the shore and the railroads already referred to, is about 240 acres in extent, and nine-tenths of it lies below the level of the lake at high water stages. At its western extremity, however, along the lake, there is a considerable piece of ground which lies several feet higher, and another high strip runs along its southern boundary, while the railroad embankment protects it on the east. Thus it can be flooded only from the northern and from a small portion of the



western side. Here it is proposed that it shall be protected by a levee four and one-half feet high, along which, on the northern side, a tree-planted street may be carried.

The high tract towards the west is to be planted as a green, forming a park-like expanse of turf, about twenty acres in extent, with groups of trees about it. This will afford an excellent playground, and near by will be an athletic ground, with running tracks and other facilities for exercise, three acres in extent. A road for general traffic will cross the park from north to south between the green and the athletic ground, and it will be encircled by drive-ways, with ample spaces for the congregation of persons on foot and in vehicles where the roads approach Lake Erie.

The remainder of the tract in question, about 120 acres of flat and swampy land, is to be turned into a lake with very irregular borders, dotted with islands and promontories. To effect this, it will suffice that the ground shall be excavated in certain places and the soil taken from these heaped upon the remaining portions, while water from Cazenovia Creek is drawn into the excavations, flooding them to the desired height and then passing out into Lake Erie, thus insuring perpetual renewal and freshness. The largest island will be connected with the shore near the north-east corner of the park by a little foot-bridge and is intended to be used for picnics. Its surface will be four or five feet above the water level and planted with shade trees surrounding open spaces of turf. Three smaller islands, which can only be approached by boats, will be reserved as picnic-grounds for private parties who may wish to hire them. And upon still smaller ones it is proposed to breed aquatic birds and grow interesting plants, their shores being protected from disturbance by spaces of shallow water.

Of course, all this implies a park where boats will be the chief means of conveyance. But, as the report explains, this fact by no means militates against the wisdom of the project, for, in all cases where similar schemes have been adopted, their success is emphatic. At Stockholm, for example, and in our own country, at Detroit, there are parks accessible only by boats, yet they are quite as generally used and approved of, as any which have a more usual character. In the case of the Buffalo park ample facilities for walking and driving are provided, but it is believed that its boating facilities may prove its greatest

attraction. To secure these it is proposed to build an artificial haven on the shore of Lake Erie—two parallel piers extending outward to a point on the lake, where at low water a depth of seven feet exists. It is expected that the existence of these piers will cause a sand-bank to form on their southern side, and, supplemented, perhaps, by a wall, will protect the shore from further wasting. In this case, a good beach for surf bathing will be secured, and, on its inward side, facilities for still-water bathing in the artificial lake can be provided. The piers will admit of the approach of steamers of sufficient size coming from the city, and the passengers they land can thence make the circuit of the park on foot or in carriages or by means of boats. For the latter purpose it is intended that row-boats shall be provided, and also public packet boats, in the shape of steam or naphtha launches, which will successively make the tour of the lake, landing passengers where desired. This tour, owing to the winding nature of the water-passages, will be nearly four miles in length.

On the eastward side of the railroad tracks it is thought that, should the state authorities agree, a rifle-range may well be established. A new one is needed in the vicinity of the town, and its association with the park would be a great advantage to those who would use it. In the winter the range could be flooded for skating, and toboggan shuttles put up near by, while there is ample room beyond it for all the accessory buildings that would be required.

Thus the proposed park would be not merely a pleasant resort, but a great and varied public playground, including many features which we have no space to note. The extraordinarily skillful way in which, in other works, Mr. F. L. Olmsted has united usefulness and beauty, is one of his highest and most peculiar titles to respect as a landscape-architect; but his talent in this direction has never been more clearly displayed than in the present scheme. It seems as though no out-door amusement in which modern youths and men indulge had been forgotten; yet all are provided for without injuring the beautiful effect which such a park ought to have. Nothing could be prettier



than the effect we may predict for this scheme, if it is as well carried out as it is now sketched on paper. The greatest variety in outline, disposition and planting will be aimed at in the arrangement on the main shore and the many islands. Each rod of the four-mile water journey will reveal new combinations of water, land and foliage, while the views from the green, with the varied scene to the eastward and the broad expanse of Lake Erie to the westward, will be of unusual charm.

Of course the beauty of the intended result would not fully reveal itself at once, for time must be allowed for trees to grow where to-day there are none. But how much intelligent planting can accomplish in a very few years, we showed not long ago when we illustrated a portion of the park that Mr. Cleveland recently designed for Minneapolis, and in all such schemes ultimate excellence rather than immediate effect is naturally the prime consideration. Of course, too, this would be a costly scheme to execute; but its projectors show that it would not be too costly for the consideration of wise city-fathers, either as regards the expense of actual construction or the future annual expense of maintenance. From the artistic point of view the idea is one that we cannot help desiring may be put in execution; for its intrinsic interest is great, and an idea of just the same kind has never before been car-

ried out by a landscape-architect. And, from the material point of view, there ought, in a city like Buffalo, to be no serious objections made.

In a separate report the Messrs. Olmsted discuss the question of the driving approaches to the proposed South Park; but as the subject could be clearly understood only by those familiar with Buffalo, it does not seem advisable to refer to it here. Our illustrations presenting views in the proposed park as well as the plan, are reproduced from the Messrs. Olmsted's report, and they serve to show how attractive a park of this character might be made.

The manufacture of the oil of sassafras is becoming an important industry in some parts of the country, especially in the Southern States, where this tree is common. Only the roots are used; they are chopped up into small pieces by a machine constructed for the purpose, the oil being then distilled from the chips by the aid of steam. About one gallon of the oil, weighing nine pounds, is obtained from 1,000 pounds of the chips. The uses for which the oil of sassafras can be employed are numerous and varied. It is a favorite perfume for soaps and candies; it is used as a solvent for different gums, and as a liniment. It is also very largely employed in the manufacture of several popular proprietary medicines. The importance of this industry may be expected to increase rather than diminish, as the Sassafras and the Persimmon are the two trees which are spreading most rapidly over the old and abandoned fields throughout the Southern States outside of the Pine Belt proper; and at present prices good wages can be made by digging out the roots.

Double Stocks.

MANY are the theories that have been promulgated as to the cause of the production of double flowers, but few indeed have been the practical experiments made with a view either to confirm or confute the assumptions that have been so freely made. But now we find a record in the *Journal of the National Horticultural Society of France* which bears so directly on the point, that we shall be doing our readers a service by calling attention to it. The record is taken from one of the reports of the German agricultural stations—institutions practically unknown here. The report in question bears the name of Dr. Nobbe—a sufficient guarantee of the credit that may be assigned to the experiments.

At the outset the point is clearly raised by the inquiry as to the reason why seeds of herbaceous plants, improved by cultivation, show a tendency to produce double flowers? Is there any appreciable relation between the nature and condition of the seed and of the flowers which result from their development? In the horticultural department of the experimental station at Tharand an attempt has been made to find an answer to these queries. For this purpose the common stock was selected, as completing its development in the course of one season. Twelve distinct varieties were selected from the establishment of M. E. Benary, of Erfurt. Of each of the twelve varieties 100 seeds, as nearly alike as possible, were chosen. These seeds were placed in Dr. Nobbe's germinating apparatus, and submitted to a continuous and uniform temperature of 20° C. (= 68° F.). After four days some of the seedlings (which must have germinated at once) were removed from the apparatus, and placed in the open ground. The other seedlings, which came up after four days, and between four and nine days after the commencement of the experiment, were thrown away, so that the seedlings reserved consisted of two classes—one in which the germination had been accomplished within four days, and the other those in which germination was not appreciably commenced till after the ninth day. We need not give in detail the arrangement for the accurate comparison of the two sets of seedlings—suffice it to say that the seedlings were eventually transferred to large pots, and placed side by side, half of the pot being occupied by those of slow growth, the second half by the quickly developed seedlings. Moreover, some of the two sets of seedlings were placed in large, others in small pots; some in sterile, sandy soil, others in rich soil, care being always taken to make the experiments rigidly comparable. In all, nearly 600 seedlings were thus under observation. In each case the time of the first appearance of the flower-bud was duly noted, and the period when the first flower opened.

From the large mass of statistical details so obtained the general result was arrived at, that for each variety the period of time between the sowing and the appearance of the first flower-bud was long in proportion to the slowness of germination. In some cases an interval of five or six days was noticed between the seedlings of the two categories. The vigor of the plant was uniformly superior in those cases where the germination was rapid, and, moreover, when subjected to analysis, the amount of dry matter as distinguished from water was always greater in the quickly than in the slowly developed plants.

But the most remarkable results are those relating to the production of double flowers. In all the varieties the proportion of double flowers was greater in the case of those that germinated quickly than in the case of the laggards. Ten plants of one variety with violet-brown flowers, grown rapidly, produced all double flowers, while eight plants of the same variety, which had germinated slowly, produced all single flowers. The following figures convey other striking illustration of the facts now mentioned. Of one hundred plants belonging to nine different varieties, the proportion of double flowers, according to the period occupied in germination, was as follows :

	Doubles.	Singles.
After rapid germination.....	82.56	17.44
After slow germination.....	27.03	72.97

It may be suggested that the superiority might be attributable to the varying influence on the same seeds of light, heat or moisture ; but the experimenters reply that the tendencies exist in the seeds themselves, for the two categories of seedlings were exposed to identically the same conditions, and yet showed the differences already mentioned. Moreover, although those seedlings which were grown on in sterile sand were much less vigorous than those grown in good soil, they, nevertheless, showed corresponding inequality as regards their flowers. Again, next to never was a single flower found in the spikes, bearing from ten to thirty double flowers, and conversely.

Lastly, hybridization shows that the seeds contain in themselves, unaffected by other conditions, the essence of what will be manifested in the plant later on. It must be added that there is in each variety a special tendency to produce double or single flowers, as the case may be. There are some which, however treated, never yield any but single flowers, while others produce almost, or quite exclusively, double flowers, and are, in consequence, doomed to disappear.

These results are so striking that we cannot but think our great seedsmen will repeat the experiments in due season, and avail themselves of the valuable information thus placed at their disposal.—*Gardeners' Chronicle*.

Entomology.

The Red Mite on Trees.

IN the second number of this journal (p. 30) Professor A. S. Packard has a note on "The Red Mite on Verbenas," in which he describes the character of the injuries committed by this minute insect, and gives a summary of the most efficient remedies known. It is usually considered and spoken of, by gardeners and horticulturists, as being most troublesome and injurious to plants in green-houses and conservatories, and occasionally to shrubs, etc., growing in the open air.

With the exception of the two instances quoted below, I do not know of any record of its injuries to large forest or shade trees in this country.

In Europe it is mentioned by several writers as attacking the Linden. In "Economic Entomology, Aptera," by Andrew Murray, those found upon the Linden are given under the name of *Tetranychus tiliarum*, and they are said to "occasionally occur in such numbers as almost to denude the trees of their foliage."

During the past summer, and also in 1887, I have found these little pests attacking, and quite seriously injuring, the foliage of large trees in the Arnold Arboretum, and on the parks and streets and other places about Boston.

The White Oak (*Q. alba*) seems to have suffered more than any other, but all Oaks, both native and those that have been introduced from foreign countries, have been more or less attacked. Those trees with very smooth, shining leaves seem to be least liable to injury, but by no means exempt, as the foliage of *Quercus rubra*, *Q. coccinea* and others very often showed too well. I have found the mites living almost ex-

clusively on the upper surface of the leaves of all the Oaks, spinning a very slight web, which is almost invisible, but the existence of which may be proved by brushing the leaf with a camel's hair brush and thus accumulating the webs. In some instances a few were found on the under side of the leaves, but these seemed to be stragglers.

The effect of their work on the Oak is to give the foliage a general dusty aspect, the leaves become yellowish or grayish above, with lighter patches here and there, and they are frequently so much injured as to become twisted and turned, as if scorched. On some Oaks, such as *Q. palustris*, the leaves become of an even, dull, ashy color all over the upper surface.

It should be stated here that the blotched yellowish or dusty appearance of the Oak leaves is not always entirely produced by the red mite, but is very often caused, either independently, or with the assistance of the mite, by a hemipterous insect, *Corythuca arcuata*, which may be found on the under side of the leaves, from which they suck the sap with their slender beaks. The delicate wing-covers are flat, meshed and scale-like, of a white color, with a dark band across the base and another at the tip, but the dark spots vary in different individuals and are sometimes very faint or entirely lost. The body is black and the largest specimens are about one-sixth of an inch in length. They usually feed in groups, causing the opposite upper side of the leaf to become gray or yellow. On very many Elms the foliage has had a dusty, grayish look, which, upon close examination, has proved to be the work of vast numbers of the red mites living upon both sides of the leaves, but, generally, most abundant on the lower surface.

They live chiefly on the under side of the leaves of the Maple, which either turn an even yellowish gray or become thickly dotted.

They are to be found on the Linden, Ash, Locust and other shade trees, and on the Apple, Plum, Cherry and Peach. The amount of damage done to these trees has not generally been serious enough to attract much attention, but I have seen vigorous young Plum trees lose all their leaves during the month of August, entirely owing to the work of myriads of red mites upon them.

I have found them in large numbers on the American and European Larches, on the Hemlock (*Tsuga Canadensis*), and also quite common on Arbor-vitæ, Spruces, Junipers and White Pines. The foliage of the Larch assumes a dead, brownish appearance when seriously attacked, while the leaves of the Hemlock become of a dull ashy or dirty white color.

In the *American Entomologist and Botanist*, April, 1870 (Vol. 2), p. 180, Professor C. V. Riley says of the mite: "It is best known in the green-house, but likewise does much damage in dry seasons on trees (especially evergreens) in the open air. It thrives best in a dry atmosphere, and we have found no difficulty in getting rid of it by a free use of its natural enemy—water. If a little soap is mixed with the water it will be more effectual."

In the "Fourteenth Report of the State Entomologist of Illinois" (1884), p. 117, Professor S. A. Forbes says: "In June the foliage of the Larches in the grounds of the University at Normal, were seriously affected by the red spider (*Tetranychus telarius*, L.), some of the trees seeming likely to die. On one of those worst infested we tried the effect of spraying with kerosene emulsion made with soap and diluted to contain two and one-half per cent. of kerosene. The insects were greatly reduced in number by a single application, but not all killed. The trees soon revived appreciably, as compared with those not treated."

In examining the mites on different plants, I find that there seems to be a marked variation in their color on some kinds of trees and shrubs. In most cases they are of the typical brick red color, varying in intensity on different plants as well as in the age of the mites. These are usually described as light yellow when young, becoming darker as they grow older.

Some of the Elms on Boston Common and the streets of the city were very badly infested, and, in some cases, almost completely defoliated, during the latter part of the summer, by this or a similar mite, which seems to be of a yellowish green color in all stages of its growth.

At least, on several young trees, from ten to fifteen feet in height, which were literally swarming with mites, so that even the limbs and trunks were covered with their fine web, I was unable to find any specimens of a decidedly red color. Those found on the Butternut were also pale yellowish green. On the White Ash (*Fraxinus Americana*) they vary considerably

from the type in color and in the greater amount of web spun. They are yellow, inclining to orange, with what appear as dark spots, of varying size, on the body, but which is probably the food within seen through the transparent skin. Whether any of these variations may constitute separate species or varieties remains to be determined by some specialist.

The past season has been unusually damp and cool, yet the mites have been very abundant, and have shown remarkable hardiness and tenacity of life in prolonged cool and wet periods. Dry seasons are said to be most favorable to their increase, and, if this is so, they may yet prove a serious annoyance to the landscape-gardener. Trees with very thick, tough leaves, such as the Oaks, may be able to withstand their attacks without showing material injury, but the effect produced is certainly not pleasing from an artistic point of view.

Arnold Arboretum.

J. G. Jack.

New or Little Known Plants.

Berberis Fendleri.*

THE common Barberry, which is so abundant in many places, especially on the hills of New England, though not a native, is our best known representative of the true Berberies. Its bright foliage and not ungraceful habit, its usually abundant, drooping racemes of yellow flowers in spring, and its still more conspicuous bright red berries in autumn, make it decidedly ornamental. Our native species resemble this very closely in most respects. *Berberis Canadensis*, not at all Canadian, as its name would indicate, is confined to the Alleghanies, and is common on stream-banks from Virginia to northern Georgia. The leaves are paler than in *B. vulgaris*, and somewhat glaucous, the flowers are smaller and in much shorter racemes, or nearly corymbose, and the fruit is shorter and more oval or almost globose.

The *B. Fendleri*, of which a figure is given, belongs to the more southern portion of the Rocky Mountains. It was first found by Fendler forty years ago in the mountains near Santa Fé, and has since been collected a little farther to the east on the upper Pecos, northward near Taos, and at the forks of the Rio Grande in southern Colorado. It is of rare occurrence within this limited range. The true Berberies, therefore, which in the Old World extend across the continents of Europe and Asia from England to Japan, are restricted in America to two small mountain districts on the eastern side, being replaced in the west and south-west by the Mahonia section of the genus, and reappearing in South America as evergreen shrubs, of which the cultivated *B. Darwinii* is an example.

The leaves of *B. Fendleri* are green and lucid, while the stem and branches are purplish and shining as if varnished. The flowers are as large as in *B. vulgaris*, in racemes an inch or two long, and at the base of the calyx are a number of smaller, but conspicuous, red bracts. This species flowered in the Botanic Garden here in 1880.

Cambridge, Mass.

S. W.

Cultural Department.

The Vegetable Garden.

THE two great dangers which threaten vegetables that have been lifted and stored early are too much moisture and too much protection. They should be kept dry overhead, cool and well ventilated. Cauliflower, planted out about the 1st of July, is now in full head, and another crop, set out from pots about the end of the month, is showing flower; that planted after Potatoes early in August is later, but the appearance of the hearts gives promise of heading soon. As frost injures the hearts of Cauliflower, in the case of well-developed heads we break a few of the outer leaves and bend them over the hearts to protect them; undeveloped heads are so encircled with leaves as to have protection enough. But it is unsafe to trust Cauliflowers out-of-doors after this time of year, and we are now lifting and storing it in cold-frames, to be covered with sashes, mats or thatch as occasion requires. In preparing these frames we are particular to have them in a sheltered situation, to save covering in winter; and we make the pit two feet deep at the back, and eighteen inches deep

*B. FENDLERI, Gray, Pl. Fendl., 5; Rothrock, Wheeler's Rep., vi, 60.

at the front, banking it with the earth removed from within the frame. The plants are then lifted, stripped of their rougher outside leaves, assorted according to their stage of growth, and planted closely together in the frame. As the heads may not have room enough if the plants are set perfectly upright, the stalks are made to lean, the several rows overlapping each other shingle-fashion. By assorting and storing according to their ripeness, we may begin at one end of the frames and cut clean towards the other, and avoid picking out a head here and there as it matures. And this lessens labor in covering. Late Cauliflowers—that is, plants just showing signs of heading—will, when treated in this way and protected from frost, develop flowers during the winter, and be ready for use in January and February, and sometimes continue till March, when they are highly appreciated. The Erfurt—and some of its varieties, Snowball, for instance—are the best kinds we have this year. Leonormand's and Algiers have not given as good satisfaction as they once did. About Riverhead, in Suffolk County, where Cauliflower is grown in large quantity for New York City markets, the Erfurt has come to be the main crop cultivated.

Brussels Sprouts are much harder than Cauliflower, and we leave them out-of-doors till severe winter weather is likely to set in in December, then we strip off their rougher leaves, lift and heel in the plants close together in a pit, shed or cellar, where they can have light and be kept cool. They usually grow so tall they are awkward to store in ordinary cold-frames. We also have good success with them by lifting and heeling them in quite close together in a warm, sheltered spot out-of-doors, and where we can conveniently construct about them some sort of a temporary shelter—of evergreen branches oftenest.

Cabbages we leave undisturbed so long as there is no danger of the ground freezing hard, say till about the end of November, and often December. We winter them in several ways: The mature ones, with heads down and close together, in out-door trenches; somewhat younger ones, with heads up and stored in frames after the manner of Cauliflower, or with heads up and close together in a shed or cool cellar, or in a bed outside six feet wide, and covered over with some sea-thatch, Oak leaves or evergreen branches. When stored outside we cannot always get them in winter, and therefore for every-day use it is more convenient to have some in a cellar, shed or frame. When packed together with heads up they are apt to grow a little in winter and burst open, but this does not happen when they are bedded with their heads down. Flat Dutch and All Seasons are capital late Cabbages, and the Drumheads are good, but sometimes a little coarse. The Savoys are the finest of all Cabbages for family use, and they are as easily grown as are the plain-leaved Cabbages. The Drumhead Savoy is the variety mostly grown for winter work.

Curled Kale is a capital winter vegetable, and easy to handle because it is very hardy, and half-grown plants are as good as mature ones. Kale can be grown as a catch crop any time after July. Extra Dwarf Curled Erfurt is the finest variety I know. It really is dwarf, much curled, and hardy. Many of the so-called Extra Dwarf Curled Kales have umbrella-heads and stems two feet long. About the end of November lift and replant closely, and when the ground freezes throw a few dry Oak leaves about them, and over these some evergreen branches. The Kale is always better for use after sharp frost; but sunshine and cutting winds in winter need to be guarded against, as they burn the curly leaves.

German or Siberian Kale, like Spinach, is usually sown in September in rows twelve to eighteen inches apart for use as greens in spring. After the surface of the ground is frozen an inch or two deep give it a slight mulching to protect it from sunshine, wind, very severe cold, and from being heaved out of the ground by frost in winter. Mulching before the ground is frozen over only invites field mice, which are very destructive to all covered crops in winter.

In this latitude part of the Celery crop should be stored some time in the latter half of November, according to the weather. Where several thousand heads are kept over out-door trenches or ridges will answer, but where only a few hundreds are to be wintered they should be stored in a shed or cool cellar. When the winters are severer than they are in New York, large growers have regular Celery sheds. For out-door wintering dig a long, deep, narrow trench in a sunny and well-drained space, say twenty or twenty-four inches deep and nine inches wide. Then lift the Celery, keeping all of one sort and all of the same size or earliness together, and stand the plants in these trenches in a single row, but as close together as they can be packed, filling in the soil and packing it firmly as the storing proceeds. Before storing, all sprouts and diseased

leaves should be removed from the heads. Never touch Celery to earth it up or to store it when it is wet or frozen. If one trench is not enough to contain the supply, prepare another alongside of, and about nine or ten inches distant from, the first one, and fill up in the same way. We run four of these trenches on one ridge, which is some seven to ten inches high in the middle, so as to throw off the water readily. We protect these ridges from frost with board coverings, and in severe weather use leaves, litter or thatch as an additional protection over the boards. As it would be impracticable to open these trenches every day in winter for a few heads of Celery, they should only be opened occasionally, and then a two or four weeks' supply taken out at a time, and brought into the cellar and stored upright in a prepared bed in a corner, or in boxes or halves of barrels. Celery is fairly hardy, and should never be covered too thickly. Never mulch the ridges till they first have a thin coating of frosty earth over them, and apply the mulch a little at a time rather than the full amount at once. Snow is a warm covering, but when a heavy coat of snow begins to thaw, shovel it off of the ridges, for snow-water is very penetrating, and the Celery must be kept dry.

Use the White Plume and Golden Self-Blanching first, then whatever kinds are now most blanched, leaving the red-tinted and green Celeries for latest supply. For all purposes we have nothing better than Golden Heart.

Glen Cove, N. Y.

Wm. Falconer.

When and How to Prune Grape Vines.

NOTWITHSTANDING all that has been said and written about the numerous systems of pruning and training the Vine, few operations of the garden are practiced with so little intelligence. Many professional gardeners need no instruction in this matter and others are above receiving it. But to amateurs and novices it may be well to say, that the chief point to remember is, that the cane producing fruit next year is grown on this year's cane.

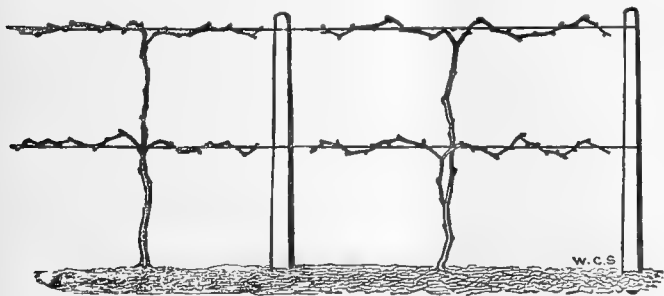


Fig. 1.

February was formerly considered the best time to prune Grape vines, but of late years fall pruning has rapidly grown in favor, and November is now chosen for this work by expert vine-dressers. The milder weather that is apt to prevail and the absence of snow make it far more comfortable for the operator, and vines that have been overtaxed and failed to mature their fruit can be treated with better judgment when their condition is fresh in the owner's mind, than if the work is deferred till February, when their condition may have been forgotten.

Another reason for fall pruning is, that the removal of surplus wood allows the vine to devote all its energies to more thoroughly ripening the remainder. The maturing and hardening of the wood is not complete when the leaves fall, neither is all wood apparently ripe sufficiently so to pass the winter uninjured. This winter killing of the young and immature wood is the strongest argument in favor of winter pruning, its advocates claiming that no mistake can be made then, as all wood that has safely passed the winter up to that period will continue to live. This is true, but the loss of any wood after pruning is generally too insignificant to be worth considering.

Unless these canes have attained a diameter of three-eighths of an inch or more, they should be cut back and the process repeated till they acquire that size. Vines thus treated will make canes of much greater value than if they had been allowed to grow and had been left to themselves.

The lateral branches that start on these canes should be shortened in to one leaf as they appear, thus forcing the energies of the plant into the main canes.

The vines are generally ready for trellising and training on any system that is decided upon the second season after

planting and may be allowed to bear a bunch or two of Grapes. Many persons are so anxious for fruit that they allow the young vine to overload itself and thus receive a check from which it often takes years to recover.

The vigor and growth of vines vary so widely in different varieties that some require closer pruning than others, and it is on this point that intelligence and judgment are needed.



Fig. 2.

Short pruning gives increased size and fine clusters in a small space. Doubling the space may result in doubling the number of clusters, but not the weight of the crop.

The ground where vines are planted should be naturally dry or made so by drainage, and sufficiently fertile to insure a good growth. Those who have doubts on this point often propose to dig in plenty of stable manure, to which I say, No! unless it is thoroughly decomposed. Otherwise put it on the surface as a mulch and the fertilizing properties will find their way to the roots. Coarse or fine bone can be placed in direct contact with the roots without injury, and almost any of the standard commercial fertilizers may be worked into the soil at planting time, but unfermented manures should be placed on the surface.

The best vines to plant are those one and two years old, the roots of which should be shortened in to about ten inches

in length. When older vines are wanted by impatient people they should have been transplanted yearly, so as to be supplied with well branched fibrous roots, which this shortening in process secures. Such vines, properly planted, will bear a full crop earlier than the younger ones, but, in two or three years, the latter will overtake them. A stake should be set with every vine, and one, or, at most, two shoots, allowed to grow the first season; they should be tied to the stake at intervals.

What is known as the Kniffen system of training, and its improvement, are the simplest of any I have ever tried, and they have, therefore, become more widely adopted perhaps than any other.

The cut (Fig. 1) illustrates the system at a glance. The vine on the left shows the original idea, pure and simple; that on the right the improvement, which consists of growing two trunks, from near the ground. The sap being divided



Fig. 3.

there, each head must get its allotted portion, while in the other case the upper head would be apt to get the lion's share on account of its tendency to flow to the highest point. The arms, which are renewed every year, being in a horizontal position, the buds start with more general uniformity than if they were more upright. The trellis is inexpensive, and is adapted to vineyard or garden. In the latter wood slats can do duty instead of wires.

Fig. 2 gives a view of a vine as it appears before pruning, and Fig. 3 the same vine after pruning. The canes forming the arms are the ones nearest the trunk of the vine, and are cut from five to eight buds long. If longer the buds nearest the trunk would be apt to start too feebly, and fail to acquire sufficient vigor for next year's arm; but if only five or six buds long, a very uniform growth is obtained. By stopping the growth of these young canes at the second or third leaf beyond the last cluster of fruit, the size of the cluster and canes is increased, and the base buds are fully developed, so that the one nearest the trunk generally makes as good a cane, and produces as good clusters as those farther away; and the fruit year after year is kept in a small area near the trunk of the vine. The chief objection to the system is that the wind and rain will sometimes break off the tender shoots while young and growing rapidly. To prevent this I have used an extra wire six inches above the arms, to which the young canes are secured, thus preventing any loss from this cause. I have taken this fall from single vines thus trained from twenty to thirty pounds of fine fruit, which satisfies me entirely as to quantity.

E. Williams.

Montclair, N. J.

Rose Notes.

AMERICAN BEAUTY.—The strong growth and upright habit of this Rose make it conspicuous when planted out in the same house with other varieties. On good, healthy plants of this variety the shoots will often attain a height of six to eight feet, and usually terminate in one very large bud, the latter having taken a good while to develop, but generally proving to have been well worth waiting for. After this terminal flower has been cut, it has been found best to tie down the shoots, so as to induce the lower eyes on the plants to break, this process usually resulting in more numerous flowers from the secondary growth than would otherwise be secured, though in some instances the individual flowers may be smaller than those of the first crop. This Rose, in common with a majority of the Hybrid Tea class, being subject to attacks of "black-spot," should be watered carefully, so as to keep the roots in as healthy a condition as possible. This fungus spreads much more rapidly on those plants which have defective root-action.

PERLE DES JARDINS.—In many cases the first crop of flowers

of this standard sort will have been cut by this time, and it will be necessary to thin out some of the weak and comparatively worthless growth around the bottom of the plants, so as to allow more air and light. At the same time it is advisable to give a little encouragement to the new growth by the application of fertilizers, preferably in a liquid form, although good results may also be obtained from a top dressing of manure. An objection has been urged against the latter method by some growers, however, on account of the greater difficulty of regulating the amount of moisture at the roots of the plants when the surface of the soil is covered with a coating of variable thickness and consistency. But whichever method is adopted in the culture of this variety, it would be well to keep in view the opinions expressed by several of our leading Rose growers, to the effect that the malformed buds frequently seen on *Perle des Jardins* during the winter months, are largely due to too liberal treatment or over-feeding.

PAPA GONTIER.—It seems evident that this Rose can be grown to better advantage in a house by itself, where this is practicable, for when grown among other varieties its peculiarities may be forgotten, and it may suffer from too great heat or too much water, when the growth is sure to become weak and the leaves fall off rapidly. *Papa Gontier* is naturally a strong grower and quickly responds to proper treatment, giving a plentiful crop of its handsome buds in rapid succession. During the past summer it has received much praise where it has been tested out-doors, making strong growth and producing large and highly colored flowers.

THE BRIDE has also made a place for itself in the foremost rank of Roses for winter use, and when afforded treatment similar to that recommended for its parent, *Catherine Mermet*, it usually produces a greater number of flowers of the same graceful form, and with the additional advantage of being white, and, therefore, of much greater general utility. In fact, this is now claimed to be the most

useful white Rose in general cultivation.

Philadelphia.

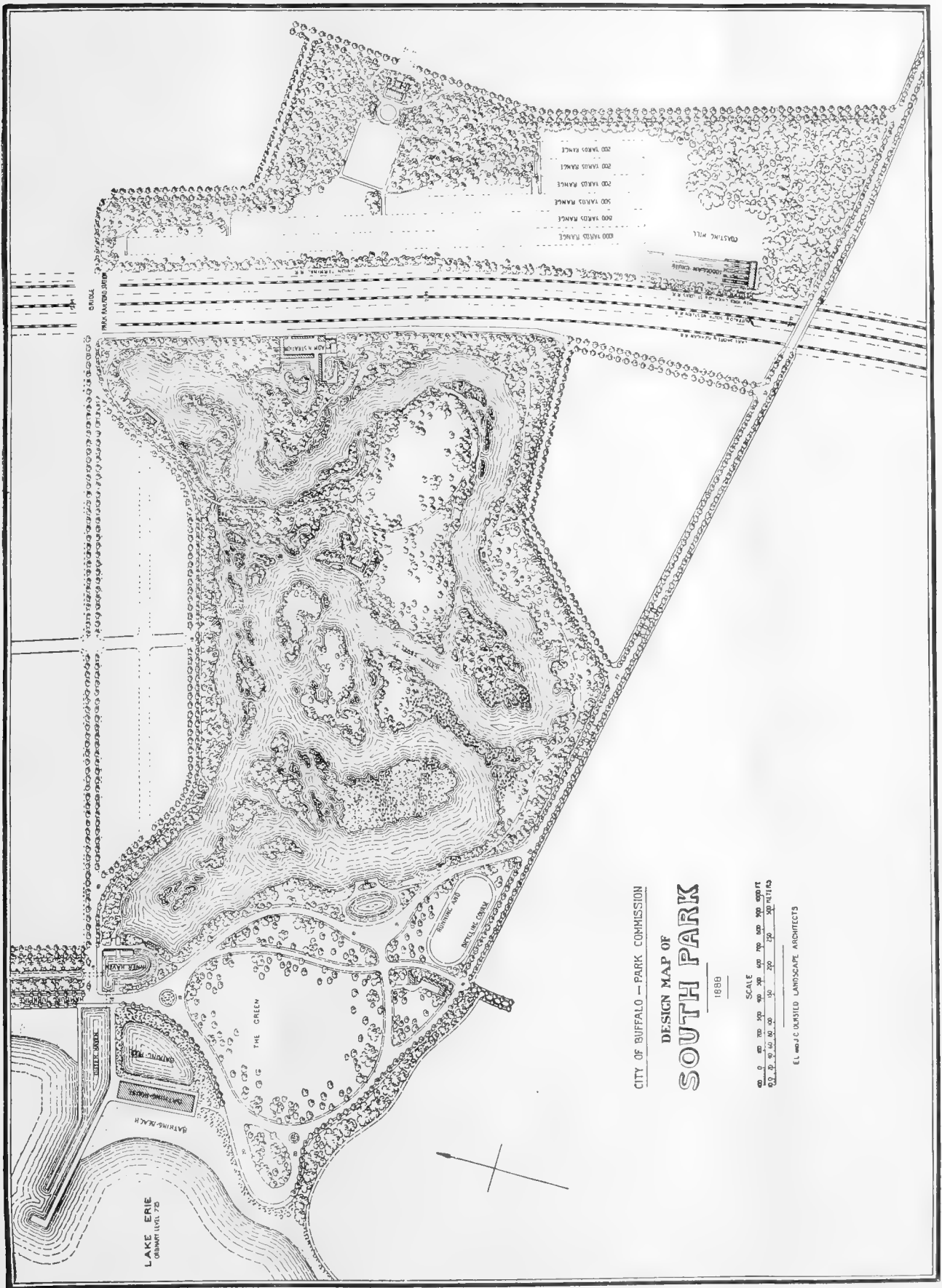
Hardy Perennials for Autumn.

THREE of the best hardy plants for autumn blooming are the common *Aster Nova Anglia*, *Anemone Japonica*—both pink and white varieties—and various species of *Kniphofia*, commonly known as *Tritomas*. I think it would be worth the trouble to prepare a bed for these specially to bloom together. The *Aster* is quite hardy, increases rapidly, either by seeds or division, and requires no further care. *Anemone Japonica* cannot be relied upon here to endure the winter, nor even farther southward, in New Jersey, though Mr. Vick, of Rochester, reports that it is quite hardy with him,



Fig. 72.—*Berberis Fendleri*.—See page 460.

W.



and it would be interesting to know whether protection beyond snow covering is given, and, if so, what kind. Neither can the Kniphofias be relied upon to endure the winter.

Mr. Harris, gardener to Mr. H. H. Hunnewell, tells me he used to keep them through, until the last few winters, when he has lost them, by tying their leaves up in the shape of a cone, and putting a few leaves around the plants. He also states that they were hardy many years ago in the Annapolis Valley, Nova Scotia. However, the safest way is to store both Anemones and Kniphofias.

The propagation of *Anemone Japonica* is quite easy. The strongest crowns or roots are planted for blooming the same season in the ordinary border, and the small roots are put into nursery beds, where they will grow large enough in one season to bloom the next year. Any piece of root will grow. Here in Massachusetts, with September frosts, it is necessary to start the plants in pots, either in moderate hot-bed or in a green-house, to hasten the blooming period. Anemones, planted three in a ten-inch pot, make fine specimens for hall decoration. It is safe to water them three times a day during the summer.

Kniphofias are raised from seeds or propagated by division. They thrive well in a deep, rich loam, and require plenty of water during dry weather. They require a fully exposed position or they will not bloom well. Kniphofias are generally called Tritomas in the trade, and most of those sold are *K. aloides* or its varieties. It is seldom, however, that the varietal rank is given to any of them—all being entered in the catalogues as species. This causes much confusion. Nicholson, in his "Dictionary of Gardening," has, no doubt, been as careful as possible not to give any varieties of *K. aloides* specific rank, but some of the species I believe are only varieties. But it is hard to pronounce positively, since the authorities are not given. *K. carnosae* and *K. Leichtlinii*, from trustworthy dealers, grown together, proved to be identical; so also did *K. Burchelli* and *K. Rooperi*.

Of the varieties of *K. aloides*, Media does not differ from the type. Grandis and Grandiflora, both noble plants, are identical; so also are Nobilis and Saundersii, though somewhat inferior. There is also a very handsome hybrid with the pretty little *K. Macowani*, known as *Tritoma media Macowani*. *K. caulescens* is so very distinct that it might pass for a *Dracæna* as regards habit of growth. It forms a decided stem, and does not bloom until four or five years old, and then from the axils of the leaves, not terminally. I consider *K. Macowani* and its variety *Corallina* the best for this district. They bloom early and continuously, produce seed in abundance, and are very easily raised by that means, blooming the second year. No other Kniphofia is so useful for cutting for house decoration, the varieties of *K. aloides* being altogether too coarse.

Wellesley, Mass.

T. D. Hatfield.

Orchid Notes.—*Odontoglossum grande*.—This species bears the largest and showiest flowers of the whole genus, and is a desirable plant for any collection, as it is easily grown and produces its flowers at a very welcome season. It was discovered about fifty years ago, growing in dark ravines in Guatemala, and therefore cannot be classed among the cool Orchids, but will be found to require the temperature of the Cattleya-house. For a potting compost we use a mixture of peat, fibrous loam, rotten leaves and moss in equal parts, taking care that the pots are thoroughly drained. While in active growth the plants require plenty of water; after this is finished they should be rested in a dry atmosphere, and given no more water than necessary to keep the bulbs plump. The racemes appear as soon as the growth is finished, bearing six or seven flowers, the lanceolate sepals of which are yellow barred with brown. The petals are brown on the lower half and bright yellow on the upper; the pale yellow lip is blotched with red. *Saccolabium bigibbum* is a pretty and somewhat rare species of close-growing habit, bearing linear-oblong leaves about seven inches long. From the axils of these are produced very short-stalked racemes with about a dozen pale yellow flowers. The lip is curiously saccate and triangular, white, with a yellow centre, while the edge is exquisitely frilled. It is a native of Rangoon, and grows well with the *Phalænopsis*.

Phalænopsis intermedia Portei.—This is a choice, and, at present, exceedingly rare Orchid. When first introduced it was thought to be a natural hybrid between *P. rosea* and *P. amabilis*; and to prove this Messrs. Veitch & Sons crossed these species and succeeded in raising a seedling which proved to be identical with those received from their native country. This same seedling is in bloom with us now, bearing a large, branching spike. In growth it much resembles *P. amabilis*,

while the inflorescence presents an intermediate character. The flowers are roundish and about two inches across; white suffused with rose near the base. The lip—the great attraction—is of a rich, dark purple. This hybrid is exceedingly free flowering, in fact it is difficult to keep a strong plant from being always in flower; but this should be prevented or the plant will soon become exhausted. It grows freely with the usual *Phalænopsis* treatment. The crossing of this hybrid with its parent, *P. amabilis*, has resulted in the production of that fine hybrid, *F. L. Ames*.

Vanda insignis is an old, but little known plant, and until recently it was very rare. For some unexplained reason, it has always been confounded with the slender-growing, narrow-leaved variety of *V. tricolor* called *insignis*, but now that the former plant is once more in cultivation, the difference in growth may easily be seen, especially in the leaves, which are much shorter and more rigid in the genuine species. The racemes bear some seven flowers about the size of those of *V. tricolor*, but they differ a good deal in shape. The sepals and petals are brown spotted with chocolate, while the lip is large and spreading, and of a uniform light rose. It is a native of the Island of Timor, where it grows on low trees much exposed to the sun, resting for a long time during the dry season. In cultivation it grows and flowers freely with the usual *Vanda* treatment. A beautiful and rare variety named *Schrœderi* has light yellow sepals and petals, and a pure white lip.

Kenwood, N. Y.

F. Goldring.

Notes From the Arnold Arboretum.

DECIDUOUS shrubs or trees which still possess beauty of foliage or of fruit after the 1st of November are not numerous in this climate and are therefore valuable. There are still a few in this collection; and these can be mentioned, perhaps, with advantage to persons contemplating the formation of new shrubberies. The Yellow-root of the Alleghany Mountains, *Zanthorhiza apiifolia*, a low shrub, specially valuable on account of its spreading habit for the margins of shrubberies and for clothing the ground among larger plants, is still covered with leaves, which are now bright orange colored. The small brown flowers of this plant, which appear in slender drooping racemes contemporaneously with the unfolding leaves, are neither showy nor ornamental. The real beauty of the Yellow-root is in the late autumn, when brightly colored foliage is not common.

Berberis emarginata, which has been mentioned more than once in these notes, is now at its best, and it is hard to imagine any shrub with more brilliant or strikingly colored foliage. *Berberis Chinensis* is very brilliant, too, but *B. Thunbergii* has already lost its leaves entirely. The fruit will remain, however, upon the branches bright and unshriveled until spring, and considerably later than those of the last named species, which on the whole, although still almost unknown in gardens, is a more graceful and desirable plant and unsurpassed among *Berberis* in the beauty of fruit.

Spiræa Cantonensis, which is often known as *S. Reevesiana* and of which there are a single and a double flowered variety in cultivation, is remarkable among *Spiræas* for the persistence of its leaves in autumn. They are still quite green and fresh, with only a slight change to yellow in the case of a few growing low down upon the stems. It is one of the most ornamental of the whole genus, although here unfortunately it is not quite hardy, losing the ends of the branches in severe winters.

Parrotia Persica, a native of the south and south-west coast of the Caspian Sea, and nearly allied to the Witch Hazel, is now a brilliant object, with its broad, golden colored leaves. This is a tall growing, robust and hardy shrub, which is not very often seen in American collections, although worth growing for the handsome coloring of its autumn foliage. Neither the flowers nor the fruit are at all showy. A second species, *P. Jacquemontiana*, a native of the Himalaya from the Indus to the Ravi, does not appear to be in cultivation. This plant is interesting from the fact that its tough and pliable twigs are used to make the swinging twig-bridges over the great Himalaya rivers. Among *Viburnums*, *V. cotinifolium* is now the only one which needs mention. It is a stout and spreading species, a native of the north-west Himalayas, where it grows between 4,000 and 11,000 feet elevation, and closely allied to the European *V. Lantana*. Its broad ovate or rotundate leaves are just turning to a deep, rich vinous red color. This plant has not flowered here yet, but the persistency of its foliage and the beauty of its autumnal coloring make it a desirable addition to the list of hardy shrubs.

Cornus sanguinea is the last of the Dogwoods to hold its leaves and its bright black fruit. This is the common Dog-

wood of Europe ; it is a hardy, fast-growing shrub, but of no great ornamental beauty. Loudon's suggestion that its specific name is due to the bright coloring of the foliage in autumn is not a very fortunate one, if we can judge by its behavior in this country, for no plant retains here green leaves more persistently.

The Washington Thorn, *Crataegus cordata*, is still a brilliant and beautiful object, with its small, bright red fruit and orange and scarlet leaves. This is one of the most rapid growing and desirable of all our Thorns as an ornamental tree, and it is free or nearly so from fungus attacks, which ruin the beauty early in the season of many Thorns. Formerly it was much more generally planted, especially as a hedge plant, for which purpose it is well suited, than at present. It is one of the most desirable of the smaller North American trees for ornamental planting. The foliage, however, of *C. arborescens*, is still more brilliant, surpassing here this year not only all other Thorns, but nearly every plant in the collection. *C. arborescens* is found in the south Atlantic States rather sparingly, and again west of the Mississippi River from Missouri to Texas. Like many of the other Thorns, it is most common and most fully developed in the valley of the Red River; here it is, when in bloom, a conspicuous feature of the region, bordering the low, wet prairies and the banks of streams, sometimes reaching a height of forty feet, with a round, wide spreading top. The bark of the trunk is much lighter colored than that of the other species, and the flowers, although small, are produced in the greatest profusion. The fruit is small, hardly larger than a pea, and bright red. It is rather a surprise that this plant should prove hardy here. So far, however, it grows vigorously and rapidly, and its further development will be watched with much interest. The astonishing and unsurpassed color of its foliage at this season of the year, should give this Thorn a place in every garden where it can be grown successfully.

Quercus Georgiana is one of the rarest plants found growing spontaneously within the limits of the United States. It is a low spreading bush, with leaves not unlike those of the Scarlet Oak, with smooth and shining saucer-shaped cups, and oval, globose acorns, and it is found nowhere else than upon the summit of Stone Mountain, in Georgia. This interesting shrub is perfectly hardy here, and just now its leaves are of the most intense scarlet color.

The genus *Smilax* is only represented in the collection yet by three species. Of these, *S. Pseudo-China* still retains its dark green leaves, which show no signs of turning to any other color before falling. The leaves of *S. rotundifolia*, the common Green- or Bull-brier, were brilliant scarlet and orange a few days ago, although now they have nearly all fallen, while those of *S. glauca* are just turning orange. These are all useful and handsome plants, and were they less common, they would be often seen in gardens, especially the Green-brier, which is one of the very best plants which can be used in this climate to make a shrubbery, or a boundary wall impenetrable and impassable.

Among North American trees, none, perhaps, retains its foliage green and fresh so late in the season as the Nettle tree, *Celtis occidentalis*. The leaves are all upon the branches still, and only here and there show a tinge of yellow. This is not a common tree east of the Hudson River, but further west and south, and especially in the far south-west, it is one of the largest, and most widely and commonly distributed of our native trees. It varies remarkably in habit and in the size and shape of the leaves, and botanists have at different times, for this reason, applied to it several different names, believing that there were several species, although it is probably wiser to consider all the different forms as included in one variable species. Sometimes it is a low bush only a few feet high ; sometimes, especially in the Mississippi Valley, it is a tall, wide-spreading tree, with rigid branches, and a tall, straight trunk ; in the valley of the Rio Grande it is low and wide-spreading, resembling an Apple-tree, with a short trunk and round head. Upon the banks of the Hudson River, opposite Newburgh, in New York, it grows with a slender trunk, and long, graceful and pendulous branches, which give to these trees, in this particular region, a character peculiarly their own.

It is certainly remarkable that this tree is so little known to horticulturists and so rarely planted. It is easily raised and grows rapidly. It is readily transplanted, and it is not at all fastidious about the soil in which it grows. It is an excellent tree to plant upon the lawn or along the road-side, and yet it is practically unknown in nurseries, and in the east certainly it is never planted—a fact which can be partially explained, perhaps, that it resembles somewhat, although a smaller tree, the Elm in habit and general appearance, and so has never become familiar to persons who are not botanists. J.

November 6th.

The Forest.

The Forest-tree Plantation of the University of Illinois.

THIS timber-tree plantation was begun in 1871 and covers about fifteen acres, with twenty-five species. The land was originally prairie, the usual deep, black, loamy soil, but varies considerably in richness and drainage. During thirty years previously the land had been used in ordinary farming, had never received manure of any kind, but was still good enough over the greater part of the area to produce average crops of Corn—say, fifty bushels to the acre. A part, however, was not so good. This last is upon the highest and naturally best drained portion, where, without manure, few field crops would satisfactorily grow. The lowest parts are too wet in spring-time for early tillage. Tile drains in this part would, it put down three feet, carry water at least half the season. None, however, have been laid. An open ditch across the plantation is the only artificial outlet for water. This does not usually dry up until after midsummer. The latitude of the place is a few miles north of the fortieth parallel.

The trees are in north and south rows—those first planted four feet apart; the later ones, eight feet apart. The earlier plantings were made two feet; the later, mostly four feet apart in the rows. Thinning has been practiced from time to time, by removing alternate rows among those at first four feet apart, and by cutting away from one-half to three-fourths of the trees from the rows. As the stand was originally good, the trees are now quite thick upon the ground.

The following table gives the kinds and quantities of trees and date of planting, together with the average measurements of the trees, on July 27th, 1888 :

	Acres.	Distance planted.	When planted.	Age in years.	Average height, feet.	Average diameter, inches.	Condition.
Ailanthus.....	1/2	4x8	1881	2	20.4	9.	X
Apple.....	1/2	4x4	1876-7	4-5	23.5	11.2	XX
Ash, Green.....	3	2x4	1871?	3	39.7	21.	XX
Black Walnut.....	1/2	2x4	1873	4	37.1	27.7	XXX
Box Elder.....	1/2	2x4	1877	Seed.	34.9	18.	XXX
Butternut.....	1/2	2x4	1871	2	31.5	19.	X
Catalpa, Hardy.....	1/2	4x8	1881	2	23.1	16.	XXX
Catalpa, Tender.....	1/2	2x4	1871	2	32.1	23.	X
Cedar, Red.....	1/2	...	1871	2-3 ft.	XX
Chestnut.....	1/2	2x4	1871	2
Elm, American.....	1/2	2x4	1871	2	37.1	22.7	XX
Hickory, Small Nut.....	1/2	2x8	1880	6	6.	3.7	XX
Hickory, Large Nut.....	1/2	2x8	1880	Seed.	9.6	5.7	XX
Honey Locust.....	1/2	4x8	1882	2	18.	9.2	XX
Larch.....	2	2x4	1871	1	39.1	28.7	XXX
Linden.....	1/2	4x8	1881	6	23.2	12.	XX
Maple, Hard.....	1/2	2x4	1873	3-7	25.5	12.	XXX
Maple, Soft.....	1/2	2x4	1871	3	53.8	30.1	XX
Oak, Burr.....	1/2	4x8	1885	4	9.1	5.	XX
Osage Orange.....	1/2	2x4	1871	2	27.9	16.	XX
Pine, Austrian.....	1/2	4x4	1872	9-12 in.	28.2	19.7	XX
Pine, Scotch.....	1/2	4x4	1872	1-2 ft.	33.3	23.5	XXX
Pine, White.....	1	4x4	1872	12-15 in.	30.4	20.	XXX
Spruce, Norway.....	1/2	2x4	1872	12-15 in.	38.5	17.2	XXX
Willow, White.....	1/2	2x4	1871	1	54.8	30.2	XXX

In the column showing the present condition of the various kinds of trees one X denotes poor; two, fair, and three, excellent order. The last are thrifty, fine in shape, and in every way promising.

This comparison of the degree of successful growth among the different varieties is perhaps the most instructive thing in the plantation. It is easy to see that some kinds thrive when planted quite thickly in blocks by themselves, while other varieties, which may succeed in the open ground or in mixed plantations, fail if thus crowded by trees of their own kind.

Another table, giving costs and receipts, will be found interesting. It will be seen the latter are very small, mostly from sale of the young trees for transplanting. There should also have been a small credit for stakes and poles used on the farm, for which no account was kept. So far nothing can be said in favor of the undertaking for profit, whatever may be the ultimate outcome. Surely fuel cannot be profitably grown in this way when the best cord-wood sells for \$5.00, delivered, and good bituminous coal for \$3.50 per ton. Ordinarily, the thinning has been done for the product cut away.

	Cost of trees.	Cost of planting.	Cultivation, etc.	Total cost.	Receipts.
Ailanthus.....	\$10 40				
Apple.....	50 00	\$25 20	\$15 00	\$90 20	
Ash, Green.....	70 94	42 58	190 63	310 15	\$35 00
Black Walnut.....	24 00	8 50	21 14	53 64	
Box Elder.....	2 00		11 00	13 00	20 00
Butternut.....	20 40	3 43	24 23	48 06	
Catalpa, Hardy.....	2 00	5 50	6 50	14 00	8 00
Catalpa, Tender.....	21 77	4 17	43 37	69 31	5 00
Cedar, Red.....					
Chestnut.....	30 00	6 79	14 65	57 44	
Elm, American.....	4 76	3 95	10 39	19 10	7 00
Hickory, Small Nut.....	3 50		6 00	9 50	
Hickory, Large Nut.....	4 50		9 00	13 50	
Honey Locust.....	10 00	6 40	5 00	21 40	
Larch.....	98 00	21 20	189 44	308 64	2 50
Linden.....	10 00	6 40	5 60	20 00	3 25
Maple, Hard.....	20 00	10 60	20 26	50 86	65 00
Maple, Soft.....	8 16	6 17	11 09	25 42	
Oak, Burr.....	15 00	6 00	2 00	23 00	
Osage Orange.....	5 44	4 78	14 14	24 34	5 00
Pine, Austrian.....	30 00	4 40	69 36	103 76	
Pine, Scotch.....	30 00	4 25	48 14	82 39	2 50
Pine, White.....	122 49	9 85	250 45	382 69	
Spruce, Norway.....	29 94	7 45	34 92	72 31	30 00
Willow, White.....	8 00	4 57	27 49	40 16	
Totals.....	\$637 30	\$192 28	\$1029 79	\$1846 87	\$183 25

Among the trees which flourish when planted by themselves are the Conifers in general, the Sugar Maple and hardy Catalpa. The European Larch is planted in long rows, reaching from the driest to the wettest portions of the soil. On the first it has done magnificently well. The trees are now about eight feet apart each way, evenly distributed, uniform in size, beautiful in shape, and thrifty in growth. On this part of the ground they average ten to thirteen inches in diameter of trunk. On the lower and richer land they are practically a failure, not from the richness of the soil, but from the excess of water.

The White Pine is quite as promising, and thrives remarkably even upon the wet soil. The trunks are straight and tall, vieing in friendly rivalry to reach the sunlight above them, and beneath excluding it by the density of their shade.

The Norway Spruce also does well, and on the low as well as the higher ground, while the Scotch (Riga) Pine comes in as a fair second to these three of the first and finest growth. But the Scotch is not so agreeable in company. Those gaining the advantage crowd out the weaker plants to a greater extent; the limbs show the same tendency among themselves, and thus a few large side branches live longer, and ultimately form larger knots than are found on the trunks of the other kinds.

The Austrian Pine is the least successful among the Conifers, owing principally to a fungous disease affecting the foliage.

The hardy Catalpa stands at the head of the list of flat-leaved kinds for quickness of growth, erect, symmetrical shape and durability of wood. The other species, *Catalpa bignonioides*, is too often injured by the winter to be successful. The Hard or Sugar Maple grows slowly when young, but after the first ten years rapidly overtakes some of the more precocious kinds. Both the Maple and Catalpa thrive excellently in close association among themselves, their dense shade keeping the ground beneath free from undergrowth of all kinds. This is only partially true of the Black Walnut. While it is marked among the thrifty and promising kinds, the trees will evidently do better in mixed plantations, as usually found in nature. Its shade is not very dense, but its vigorous roots will not let many other trees have much chance near by. A proper selection and alternation is sure to be useful in this case.

A mistake was made in the Ash trees. White Ash (*Fraxinus Americana*) was to have been planted, but the nurseryman who sold the seedlings and the committee who bought them were alike unable to distinguish this species in the seed-bed from the Green Ash (*Fraxinus viridis*). The same thing often happens among those whose business it is to handle trees and nursery stock, but this no less makes the blunder a bad one, and one that surely ought to be avoided. But the Ash trees generally thrive greatly better in mixed plantations, and the

Green Ash conspicuously so. The average diameter of the trunks of those planted in a block by themselves, about eight by twelve feet apart, seventeen years old, is seven inches, while some of these same trees, taken as thinnings from the rows and planted elsewhere, are nearly double this size. In the block the trees are also very irregular in size. The smaller ones are not killed outright, but have little vitality and make slow progress. Among no other kind of tree is there so much undergrowth of vines, shrubs and weeds. They are evidently incapable of utilizing the sunshine in any such exclusive way as the Pines and Maples.

In the same way the Osage Orange is a failure. A specimen left here and there in a hedge does remarkably well for some years, and even thickly planted in a single row the trees are fairly successful; but they have badly disappointed many in their poor growth in the plantation. Planted originally two by four feet apart, they have from time to time been thinned to about eight by eight feet. Now, at the end of sixteen years, they averaged only five inches in diameter of base of stem. Neither are the trees in good shape for timber purposes, being crooked and scrawly in trunk and limbs.

The White Willows reach skyward above all the other trees and for summer fuel probably lead the list. It may be that for special manufacturing purposes this wood will be worth growing. The soft Maple (*Acer dasycarpum*) stands next the Willow in height, and makes clean, straight trunks with a dense canopy of foliage above.

University of Illinois.

T. J. Burrill.

Correspondence.

To the Editor of GARDEN AND FOREST:

I have an Osband's summer Pear-tree, one-third of which has been grafted into the excellent Reeder variety. In the summer of 1887 the tree began to blight somewhat, and has continued to do so through the summer of 1888. As yet the Reeder portion of the tree has not been affected (with the possible exception of one small twig). Fearing that I may lose the tree, and desiring to preserve the Reeder variety, I propose to graft it (the Reeder) into other trees. Will it do to take the scions from the healthful Reeder portion of the blighting tree?

Amherst College, Mass.

A. D. Morse.

The Pear blight is caused by *Micrococcus amylovorus*, Burrill, and can be transferred from diseased Pear-trees to healthy trees by natural contagion or by inoculation. If the Reeder portion of the tree of our correspondent has already one twig affected with *Micrococcus*, it would, of course, be unwise to take grafts from the immediately adjacent branches. It is probably safe, however, to attempt grafting with the more remote twigs of the Reeder portion of the tree. At any rate, if the object is to preserve the Reeder variety, it is certainly better to attempt to graft other trees with the apparently sound shoots of the Reeder portion, than to trust to the tree already grafted, a part of which, at least, is known to be diseased. It would, of course, be better still to procure grafts from other localities now free from the blight. It is to be hoped that our correspondent has before this cut off and destroyed the blighted branches on his tree.

W. G. F.

To the Editor of GARDEN AND FOREST:

Sir.—In the issue of your paper for October 3d, in the description of *Rhododendron Vaseyi* under "New or Little Known Plants," I noticed a mistake in regard to the locations in which it has been found growing. It was stated that it was "found in Cashier's Valley, South Carolina," etc., subsequent to its being discovered by Mr. Vasey, near Webster, in Jackson County, North Carolina. Cashier's Valley is in Jackson County, North Carolina; and from the best information I find that *R. Vaseyi* has not been detected outside of this state, and only in two counties—Jackson and Mitchell. It may be of interest to add that *R. Vaseyi* has been found growing quite to the top of Grandfather Mountain, at almost 6,000 feet elevation, and in this high location it seemed to be perfectly at home, being vigorous and flourishing.

Highlands, N. C.

H. P. Kelsey.

[By an oversight, the name of the town near which *R. Vaseyi* was found during the present season, appeared in our description as Louisville. It should have been Linville.—Ed.]

Periodical Literature.

IN a recent number of *Nature* are summarized a series of articles, written for *Les Missions Catholiques*, of Lyons, in which M. Armand David, a Lazarist missionary and distinguished man of science, recounts the scientific gains which have accrued to the world through the labors of Catholic ecclesiastics in the East. Few persons realize how great these gains are—how much self-sacrificing energy has been spent by missionary priests in studying the flora and fauna of the regions where their proselytizing work is carried on. In China especially their labors have been invaluable. To speak of botany alone, the first work of importance on the flora of China, published this year at the expense of the French government, in two finely illustrated quarto volumes, describes M. David's own collections, and is called "*Plantæ Davidiana*." Although it contains only a small proportion of the plants native to the empire, it deals pretty fully with those of the northern provinces and the Mongolian mountains, and adds largely to the list of the discoveries of English and Russian explorers. Many important European genera—like the Trefoils, for example—are not found in China, but many American plants have their representatives which are not represented in Europe—as *Pavia*, *Bignonia*, *Aralia* and *Dielytra*. A pretty plant (*Xanthoceras sorbifolia*), much cultivated in Peking, M. David found growing wild in Mongolia, and successfully introduced into France. Another find was *Davidia involu-crata*—a comparatively tall tree with large leaves, for the introduction of which, we are told, a considerable reward has been offered by an English amateur. M. Delavay is another missionary who, inspired by M. David, and, like him, helped with government money, is exploring with much success. His residence in the almost unknown province of Yun-nan gives him a good field for work, and the collections he has sent to France are the most important yet received, and will soon be published with M. Frauchet as editor. Where only one Chinese Primrose was formerly known, M. Delavay has raised the list to more than thirty. Instead of four or five Chinese Rhododendrons, forty-five have been made known through his labors and those of M. David. Several new species of Vine have also been discovered, among them one (*Spinovitis Davidiana*) found in a wild state in the central mountains of Tsin-lin, is noteworthy as having its stems covered with spines. Many other priests devote much of their time to forming collections for the French museums, and it would be difficult to overrate the sum total of their services, which, moreover, have been as great with regard to the fauna as with regard to the flora of the East.

Horticultural Exhibitions.

The Philadelphia Chrysanthemum Show.

THE Chrysanthemum Show of the Pennsylvania Horticultural Society, held in Philadelphia last week, was especially strong in the number and quality of the plants exhibited. The floor of the spacious hall was filled, and almost every plant was worthy of mention for its healthful appearance and its abundance of well-developed flowers. The general effect of this mass of color was admirable, and it was heightened by the garlands of Laurel, the Palm branches, the evergreen boughs, the bright-colored autumn leaves and berries, the bunting and Japanese lanterns, with which the walls and balconies, stairway and stage had been decorated by the Florists' Club of the city. There were fine examples of plants struck in summer and carrying a single bloom, but they were comparatively few. The cut flowers were of excellent quality, and while no single fifty equaled Judge Benedict's collection in New York, there were many more of them, all told, and the general average was better.

The finest plants in the hall were specimens of *Marvel*, *Grandiflorum*, *Lucrece* (new), Mrs. Frank Thompson, Mrs. C. H. Wheeler, Mrs. A. Blanc, *Cullingfordii*, M. Freeman, Robert Cranford, *Bride* (new), Mrs. William Bowen (new, brighter in color than Mrs. C. H. Wheeler, but resembling that fine variety), Mrs. William Singerly, Mrs. Joyce and *Puritan*. All these make the strong growth needed for exhibition specimens. Some of the varieties with most beautiful flowers, like Mrs. J. J. Bailey and Mrs. J. Wanamaker, do not grow large enough.

Among the noteworthy seedling plants exhibited was an unnamed variety grown by H. Surman, gardener to Mr. E. W. Clark. It is an improvement on his seedling, Mrs. E. H. Clark, which won the highest premium in 1887; a second was shown by William Jamison, and a third by Robert G. Carey,

gardener to Mr. J. C. Price, of Chestnut Hill. The finest seedling plant was a specimen of the Mrs. W. K. Harris, the flower of which has been mentioned.

The most notable cut blooms exhibited here for the first time, and remarkable for size, color and quality, were Mrs. Alpheus Hardy, which has already been described in these columns; Mrs. William K. Harris, shown by Mr. Harris—of great size and substance, and probably the finest yellow *Chrysanthemum* yet produced; L. Canning, pure white, Mrs. M. J. Thomas, blush white, and E. H. Fidler, bright bronze yellow, incurved and distinct in form—the last three shown by Craig & Brother; Lillian B. Bird, the largest flower with tubular florets, and Kioto, chrome yellow, shown by E. L. Fewkes, Newton Highlands, Massachusetts; Wootton, white, shown by John M. Hughes, gardener to Mr. George W. Childs; and Mrs. Carnegie, John Thorpe's wonderful variety, for which a gold medal was awarded. The silver medal went to Robert Craig, for Mrs. Isaac C. Price, a beautiful yellow of large size and distinct form.

The premiums were very liberal. A prize of \$100 was awarded to J. W. Colflesh for the twelve best plants. A second prize of \$85 went to John Kinnear, gardener to Mr. J. J. Bailey; a third of \$65 to Gordon Small, gardener to Mr. William H. Singerly, and a fourth of \$50 to Mr. W. K. Harris. There were many other special money prizes, gold and silver medals and silver cups. The principal awards, besides those already named, were made to William Tricker, gardener to Judge Benedict, of Staten Island, William Dewar, P. Conlan and Gebhard Huster, gardener to Mrs. Heyl.

The attendance was unusually large, and altogether the exhibition can safely be described as the most successful of its kind in the history of this venerable society.

Chrysanthemums at Boston.

AT the exhibition of the Massachusetts Horticultural Society, which opened in Boston on Wednesday of last week, prizes were offered for Chrysanthemums alone, and yet both halls of the Society were well filled with plants and cut flowers. On the stage at the farther end of the large upper hall was displayed a collection of sixty plants from Edwin Fewkes, arranged in a sloping bank, the colors being admirably blended and contrasted. Along the entire length of the front of the stage was a bright terrace of cut flowers. In the centre of the hall were the various plants in competition for the prizes for specimens, while around the sides were the large groups in the twenty-plant class. Altogether, the scene presented to one looking down from the gallery was really brilliant. As a rule, the plants were not remarkable. They were fairly good, however, and were commendably free from artificial training and unnecessary staking and tying. One of the most remarkable plants in this hall was a seedling of an unusually deep orange color shown by Dr. Walcott, who also contributed flowers from other seedlings of conspicuous merit. Several of these were from seeds of Mrs. Wheeler, and one, a sport from *Nil Desperandum*, was a large, full, creamy white.

The cut specimen flowers surpassed, in size, variety and beauty, the best shown at any former exhibition. Two lots of twelve, contributed by Miss Simpkins, of Yarmouth, were superior in uniformity of excellence to anything in their class, and won both the first and second prizes.

Very striking were some of the novelties shown by Fewkes & Son, of Newton Highlands, especially those from the Japanese collection sent originally to Mrs. Alpheus Hardy, and including the famous variety named for her.

These flowers have attracted much attention in other exhibitions this year, and some of them rival the Mrs. Hardy in beauty, although not in novelty of form. A seedling from Mrs. Wheeler was shown by Mr. E. A. Wood, which is even richer in color than that admirable flower, and which has the additional advantage of being very double to the centre. Of the cut flowers in vases, mention should be made of some blooms of *Cullingfordii* and *Jardin des Plantes*. They were grown by Mr. C. J. Power, of South Framingham, and as displayed on long, strong stems, they showed a grace of form and richness of color which nothing short of the most intelligent cultivation could produce.

The principal prizes, except those already mentioned, were awarded to E. W. Wood, Mrs. F. B. Hayes, Joseph H. White, Mrs. E. M. Gill and P. Malloy.

A superb specimen of *Cypripedium insigne* was exhibited by W. H. Martin, gardener to Mr. N. T. Kidder, of Milton. The plant bore ninety flowers, and perhaps no finer one was ever grown.

Notes.

Hill & Company, of Richmond, Indiana, received the leading prize at the Chrysanthemum exhibition at Indianapolis.

Messrs. Pitcher & Manda, of Short Hills, New Jersey, have lately secured a white flowered variety of *Masdevallia Harryana*—the only plant of the kind known to exist.

The banquet at the opening of the Chrysanthemum exhibition in Philadelphia last week was pronounced a most enjoyable and successful one by the many visitors who were present at the hospitable invitation of the Florists' Club, of that city.

The Proceedings of the Annual Convention of American Cemetery Superintendents, held at Brooklyn in September last, have been published in a neat pamphlet. The papers read and the discussions which followed contain much interesting information and sound doctrine.

German horticultural papers note with surprise the number of the florists who attended the recent convention in New York, and with still more surprise the distances over which many of them traveled to be present, "some of them actually coming three thousand miles"! According to their witness it was the largest meeting of horticulturists that has ever been held in the world.

The trustees of the Massachusetts Society for Promoting Agriculture voted, at a recent meeting, upon the request of Mr. B. E. Fernow, to contribute \$100 towards the cost of the exhibit to illustrate the forests and forest products of the United States at the Paris Exhibition of 1889, which the officers of the Forest Division of the Department of Agriculture are preparing.

We are apt to think that the cultivation and naming of numerous varieties of fruits is a comparatively modern practice. But how far from true is this belief may be shown by the fact that between the years 1598 and 1628 Le Lectier, Royal Procurator at Orleans and a famous pomologist, collected in his garden 262 varieties of Pears. In 1628 he printed a long catalogue of fruits, and caused it to be circulated with the request that cultivators would inform him with regard to all varieties as yet unknown to him.

According to the *Illustrierte Garten Zeitung*, of Vienna, no less than a hundred varieties of the Beech are known in gardens. The most recently introduced variety, called *Fagus sylvatica conglomerata Bandrilleri*, has twisted, almost rolled-up leaves, and a very short, dense spray. A favorite tree for street and formal planting in Germany is the so-called "Bullet Acacia," which has a tall, straight stem, surmounted by a dense spherical head; and the new Beech is recommended as a good substitute for this Acacia, as it can be grown to a similar shape without the use of shears, its leaves appear earlier in the season, and it often retains them throughout the winter.

Chrysanthemums of great beauty are sold this year in the streets of Boston in surprising numbers. A bunch of flowers, such as hardly existed in the United States five years ago, can be bought now for fifteen or twenty cents from the itinerant flower-sellers seen in all the most frequented parts of the city. The improvement of the Chrysanthemum and its growth in popularity is one of the most remarkable and encouraging signs of horticultural development in the United States. It is a question whether this flower does not have a stronger hold upon popular favor in this country than even the Rose. But if this is true, it is only temporary. The Rose has held its own for centuries. New favorites come and go, but in the long run the Queen of Flowers maintains her supremacy in all lands and among all people, and she will continue to do so.

Of Winter Apples for market in New England, the Baldwin, Rhode Island Greening and Hubbardston continue to hold supremacy, and last winter the Rhode Island Greening, for some unknown cause, kept better than the Baldwin. Professor Maynard reports, in a late bulletin of the Massachusetts College Station, that the Pewaukee, a seedling of the Oldenburg, possesses all the vigor and productiveness of its parent. The fruit is of good size, striped and splashed with red and covered with a deep bloom. It is a late keeper, of fair quality and has borne heavily every year in the college orchard. Sutton Beauty, owing to its fine flavor, its beauty and its productiveness, is slowly finding its way into orchards. Its medium size injures it in competition with so popular a variety as the Baldwin. The Red Russet, too, is gaining favor for the vigor and productiveness of the tree and the beauty and long-keeping quality of the fruit. The tree is as sturdy as the Baldwin and the fruit keeps as long as the Roxbury Russet.

Some exhibitors of Chrysanthemums endeavor to keep the blooms fresh for six or eight days, but to have them in the best condition on a given date they should not be cut earlier than four days before that date. Mr. E. Molyneux states in *The Garden*, London, that varieties of the darkest shades of color—chestnut, bronze, deep lilac and rose—lose their freshness more quickly than the lighter colored varieties, while primrose, yellow and white keep fresh the longest. The beginning of decay can best be ascertained by feeling the lower florets. These should be crisp and solid, not soft and flabby. The blossoms should be cut when fully developed and with a stem at least twelve inches long, so that a small portion of it can be cut off every day. Place the stem in a bottle of water to which salt has been added in the proportion of a teaspoonful of salt to a quart of water. The flowers should be placed in a cool, slightly darkened room having a dry atmosphere.

The Pomological Institute of Reutlingen, Germany, consists of two branches, a preparatory and a high school. The programme of studies to be pursued in the high school during the coming winter half-year has just been issued, and is of interest as showing how systematically and thoroughly horticulturists are trained in the Fatherland. Botany, with the morphology and anatomy of plants; pomology, drawing—each of these is to be studied during four hours each week. Two hours each are to be devoted to vegetable gardening, the theory of horticulture, geognosy and geology, chemistry, the care of woodlands, arithmetic, and the conduct of business. One hour a week is given to the means of preserving fruit from insect depredations, and the remaining time will be filled by practical work, experimental demonstrations and practice with the microscope. As aids to oral instruction the institute is supplied with model gardens, nurseries, orchards and plantations of small fruits, an arboretum, a forcing-house for fruit, green-houses of other sorts, a rich natural history collection, a large library, and maps, pictures, apparatus and models of every kind.

In spite of the fact that unexpected early frosts somewhat injured the Cranberry crop of southern Massachusetts, it is expected to reach greater proportions than ever before. The largest annual shipments are made from the town of Wareham, at the head of Buzzard's Bay, where nearly 18,000 barrels were packed last year. One bog in this vicinity covers 500 acres. Prices vary much, according to the season, but it is estimated that in a good year a cultivator who understands growing, harvesting and packing his berries may count half his receipts as clear profit. Wisconsin and New Jersey also grow Cranberries in large quantities, the former state sometimes producing double the yield of Massachusetts. But owing to the difficulty of protecting the western bogs against frost their yield is very uncertain, having varied during the past few years from as few as 13,000 to as many as 132,000 barrels. In Massachusetts, where innumerable brooks and rivers traverse the Cranberry districts, the bogs are surrounded by a system of ditches and dams so that they can be quickly flooded to a depth of several inches, and the berries thus protected against frost. The quality of the so-called Cape Cod Cranberry is also considered better than that of the western fruit, and has been largely exported even further west than Chicago. The harvest is usually completed about Thanksgiving time.

A horticultural firm in Holland recently received from its agents in Java a specimen of the gigantic Orchid, *Grammatophyllum speciosum*, Bl. Accompanying it was a description of a plant growing in the botanical garden at Buitenzorg, in Java, which we quote from the pages of the *Gartenflora*. "This plant now displays twenty-eight flower-spikes, which average eight feet in length, and some of which bear as many as seventy blossoms, about fifty blooming at once. The flowers measure six inches across, and each petal is three inches in length by one and one-half in breadth. The color of the sepals and petals is yellow with brown spots, while the comparatively small lip is purple streaked with brown. The stout flower-stalks stand mostly erect, as do the heavy pseudo-bulbs, some of which are as much as ten feet in length. As is the case with most Orchids, the flowers remain a long time fresh. The plant is a native of the forests of western Java and of some of the other islands of the Indian Ocean, although it is nowhere very common." *Grammatophyllum speciosum* was introduced into Europe by the Loddiges, and flowered in their nurseries during the year 1852. There is a figure of the rather imperfect flowers of this specimen in Paxton's *Flower Garden*, t. 69, and there is a much better figure in the *Botanical Magazine*, t. 5157, from a plant which flowered in England in 1859.

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Injuries to Shade Trees.

THAT a well-formed, vigorous tree is worthy of respect and consideration, is a fact of which it is to be hoped no reader of GARDEN AND FOREST is either ignorant or unmindful. There is one point, however, to which public attention should be called, viz., to the danger arising from the removal of large branches of sound trees, either intentionally, by wholesale pruning, or by the violence of winds and storms, without proper subsequent care. If a branch is in the way, few persons now hesitate about cutting it off, no matter how large it is, and it is not a rare thing in our thickly-settled towns and their suburbs to see trees which have been reduced to two-thirds, or occasionally to one-half, their normal dimensions, by indiscriminate trimming. Or it may be that a superannuated family mansion has been sold for a few hundred dollars and removed to the outskirts of the town, to be transformed into a tenement-house which is to be made to pay several hundred per cent. to the shrewd purchaser. That is, perhaps, none of our business. But it does concern us if the house has to be dragged through a mile or two of streets, crashing and tearing off the branches of shade-trees on the way. Recently a three-hundred-dollar house did much more than three hundred dollars' damage to trees during its slow passage down the streets of a city, which need not be named.

In the first place, by such acts of violence, or even vandalism, the beauty of the trees is diminished, and they become not only unsightly, but also less valuable as shade trees. That is evident to every one. But the more serious evil of which I would speak is one which is not recognized at the time. The trees are not killed at once, to be sure, but the open wounds made by breaking or cutting off good-sized branches are just the places in which the spores of many destructive fungi lodge and grow. So long as the bark remains as a covering of the wood, such spores do not readily find an entrance to the wood itself. Of course, there are some fungi which destroy trees by entering the leaves or roots. But the fungi now referred to are rather certain toadstools, punk-fungi and their allies, which, while they do not grow upon the leaves and

not usually on healthy roots, often attack open wounds where the wood, exposed to the action of the weather, becomes naturally somewhat rotten. Once established in such places, the mycelium of these fungi makes its way slowly but surely into the adjoining healthy wood, until, in comparatively few years, the whole tree becomes diseased. The mycelium is not annual but perennial, and bears, on the surface, repeated crops of toadstools or punk, as the case may be. Knowing this fact, one should hesitate before cutting off large branches, and so endangering the life of the tree itself. We know the dangers from open wounds in animals, and we must also recognize that they are dangerous in plants. If one wishes to be convinced of the truth of these statements, he has only to walk along the streets of any town in late summer, and notice how frequently toadstools and punk are growing on the scars where branches have been removed. If the wounds are of some years' standing, and have not been treated, as all wounds upon trees should be treated as soon as made, with a coating of coal-tar or paint, he will probably also find rotten spots on the trunks themselves, in which fungi are growing, which have developed from the mycelium that has penetrated into the trunks from the old scars.

In this connection one should notice the wounds caused by the bites of horses fastened to trees. In thickly settled regions this evil is a serious one, and householders should be compelled by law to place some protection around the parts of the trunks of trees on their sidewalks likely to be injured by horses. Oxford Street, in Cambridge, Massachusetts, affords a good illustration of the evil. For some distance the trees have been bitten by horses, and on the side of the trunks facing the street there are large wounds, which are not only unsightly, but which have also caused a disturbance of nutrition to such an extent that the trees are sickly, and, in some cases, apparently dying. The health of trees which are for the benefit of coming generations as well as our own should not be endangered by the carelessness of those who now live near them.

Uses are constantly found now for minor products of our forests which, until recently, were considered valueless. A conspicuous example of this fact is pine-fibre matting, which is manufactured, in North Carolina, from the leaves of the Long-leaved Pine (*Pinus palustris*). The industry is a new one, comparatively, but it has already become important, and it is likely to grow as the value of the matting made from Pine leaves is better known. A bagging material is also made in the same way, which can be used for covering cotton-bales. This fact is now creating much interest in the cotton-producing States, because the price of jute-bagging, which up to the present time has been the only material used for covering cotton-bales, has been enormously increased by the manipulation of a combination of importers who control the supply, and who have formed a jute-bagging trust. It is now believed that Pine-leaf bagging will prove the best substitute for jute. Should this expectation be confirmed, the production of this article may be expected to be very large in the course of the next few years.

The green Pine leaves, collected in the forest for the purpose, are purchased at the factories for fifteen cents the 100 pounds. They are first cleaned, and then placed in large iron cylinders set on end and surrounded with steam-pipes. They are then thoroughly steamed, the vapor being conveyed through pipes into an ordinary distillery-worm in an adjoining building. Pine-leaf oil, a valuable antiseptic, is obtained in this way at the rate of about one-half gallon for 100 pounds of leaves. The leaves are then boiled to remove the silica, which is found in their outer covering, and which can be used in tanning leather. The leaves are next boiled again and bleached, and are then ready to be dried, which is done in machines, by means of which all moisture is evaporated from them. The fibre is then ready for manufacture, and is put up in burlap bales weighing twenty-five pounds. The Pine-leaf

fibre has also been found valuable by surgeons in the treatment of fractures and in dressing wounds. It is an excellent disinfectant, and probably many other uses will be found for this long-neglected product of the forest.

From a note in the *English Mechanic and World of Science* it appears that the paper manufactured from the wood of the Red Cedar (*Juniperus Virginiana*) has been found useful for underlaying carpets and for wrapping wool, furs and other articles liable to be injured by moths, which are driven away by the peculiar odor of this wood. The wood from which this paper has been made has been the waste of pencil factories; but if it is found to possess the value which is attributed to it, the establishment of pulp mills in parts of this country where the Red Cedar abounds will, no doubt, prove an exceedingly profitable enterprise. The Red Cedar is the most widely distributed of North American trees. It is found growing, often in great abundance, from Canada to Texas, and from the shores of the Atlantic to those of the Pacific. In some parts of the country, especially in Florida, where the best pencil wood has been procured, and along the valley of the Red River in Texas, it grows to a large size, with tall, straight trunks, which yield straight-grained lumber of high quality. More often the trunks of the trees are short, often contorted and filled with knots, and, therefore, unfit to manufacture into lumber, and up to this time have been of very little value, except for fence-posts and inferior railway-ties. If Cedar paper, however, is really valuable, the trees which have been considered worthless can be profitably utilized. In the central and in the eastern parts of the States of Kentucky and Tennessee there are hundreds of square miles of rocky and sterile soil—Barrens, as these lands are known locally—covered almost entirely with Red Cedars, which, if they can be profitably manufactured into paper-pulp for this special purpose, will give a much greater value to these lands than they have ever been suspected of possessing.

Newport.—I.

I THINK the first thing that strikes a foreign visitor to Newport must be the singular way in which evidence of lavish expenditure mingles with signs of an almost pauper disregard for appearances. Such contrasts often reveal themselves in America, but seldom so forcibly as here. The town to which the great colony of costly and ambitious summer villas is attached, is much less neatly kept than is the rule in New England, and certain of its outlying streets—constantly traversed by pleasure-seekers in gorgeous equipages—are a veritable offense to the eye. At one step we pass from little palaces, surrounded by exquisitely kept grounds, almost into "Shantytown" itself. Nor are striking signs of carelessness absent, even though we keep strictly within the villa districts. Even on Bellevue Avenue the borders of the road are left untended to a degree which, in Lenox, for example, would not be tolerated for a week; and where a vacant lot occurs, its fence is a tumble-down, weed-grown affair, that a respectable farmer in a rough country village might blush to own. I have heard it said that Newport, despite its claims to art and taste, to elegance and fashion, is, as a whole, a vulgar-looking place. The term is too harsh, yet there is some excuse for its application. In many places we seem to read a regard for what is visibly one's own combined with a disregard for what is everybody's; a love of display united to a lack of public spirit, which should certainly not characterize a refined community.

The best part of Newport is the beautiful Cliff Walk, which runs for more than three miles on the edge of the lifted rocky shore, passing villa after villa set back beyond verdant lawns. An old public right of way has most fortunately kept this walk open and free, although the land all belongs to the villa-owners; and the appearance of brotherly concord between neighbor and neighbor and generosity towards the public, which it seems to reveal, added to its intrinsic charms, has made it a frequent theme for praise with foreign writers on landscape gardening and the arrangement of country towns. Here, at least, no signs of carelessness appear. The soil along the cliffs is, by nature, thin and poor, so it requires an immense amount of care and money to make and keep these lawns, although the damp climate favors the work. Well kept and

fresh they are, indeed. "And no wonder," I heard a lady exclaim, "for when there are signs of a drought, the owners come forth and water them with their tears." The statement that the particularly beautiful turf which covers the two or three acres of a certain gentleman is annually taken up and rolled away in his cellars over winter, is an equally amusing fiction; yet this I heard told more than once, with an accent which almost implied belief in its truth.

Beautiful and appropriate as are these lawns on the landward side of the Cliff Walk, a mistake has perhaps been made in continuing them on its seaward side, where they skirt with a very narrow border the rough rocky edge of the cliff, or are carried down the slope for a considerable distance in places where the rocks lie lower. In such places as these they have too much the look of earth-works for defense; and everywhere they unite but poorly with their bold rocky finish. The pathway might better, perhaps, have been taken as the boundary line for the lawns, and the spaces beyond, whether wider or narrower, treated in a naturalistic way—made to look as though the hand of man had not tampered with their original covering.

The fierce sweep of the sea winds in winter is, of course, injurious to the growth of trees in such exposed situations as those along the Cliff Walk; but shrubs and flowers can be made to grow with great luxuriance. The lapse of five or six years has surrounded many of the newer houses with rich thickets of tall shrubs and even with trees of considerable size; and year by year veritable carpets, in the shape of formal beds of bright flowers and foliage-plants, are spread out around them. These beds deserve admiration from the merely cultural point of view—nothing could be better, as far as luxuriance and neatness are concerned. Nevertheless, I think they may be counted as another item to excuse the cynic who speaks of bad taste in connection with Newport. Bold effectiveness, rather than beauty, seems, as a rule, to have been sought for alike in their composition and in their disposition. As a rule, their colors are crude and inharmonious, and they are multiplied out of all reason and placed where they do the greatest possible harm to the effect of the grounds as a whole. The fact is doubly to be regretted, for Newport is the very place where formal bedding might often be used to the best advantage. Nowhere do we see so many houses of the most formal and dignified character standing close to a road or even a street, and surrounded by very small grounds. In such cases a formal disposition of the grounds might well suggest itself as the most appropriate. But to be good in effect the scheme should be consistent. Formality should reign and rule, not merely occur in certain features. But, instead of straight-lined roads and paths and regular arrangements of shrubberies, clipped hedges and formally shaped trees, with which pattern-beds and borders would be in true accord, informal schemes are seen where landscape effects are simulated in miniature—where winding drives and paths are flanked by "natural" groups of trees and shrubs and tall flowering plants—sadly interfered with, often, indeed, wholly ruined, by a profusion of flat beds and borders, rigid in outline and gaudy in color. No outlines can be too formal for such beds, if they are graceful in their own way and if the general scheme sanctions formality; and no colors too bright, if harmony in contrast has guided their selection. But I think we may look in vain at Newport for a place in which all these conditions are respected.

There are exceptions, however, to the general and excessive use of bright set beds and borders. Here and there—as in the pretty grounds of Mr. Sheldon, on Narragansett Avenue—a small expanse of lawn is made the most of by plantations which merely fringe its borders, and lies in refreshing peacefulness, undisturbed by notes of gaudy color. Mr. Goelet's large place, again, where this avenue meets the Cliff Walk, needs the removal of but one or two beds to make it perfect. There is no other house in Newport at once so beautiful and so appropriate in its beauty, and none so charmingly connected with its grounds. When I saw it the wide lawns were in perfect condition, rising into a low, grassy terrace all around its base; vines had grown upon it to just the right extent; a few formal plants in pots appropriately adorned its steps, and the masses of green which decorated the piazza towards the sea were undisturbed by over-prominent notes of color—a single yellow flower-pot giving just the one needed touch of brightness.

This, I think, is a type of what a Newport house should be when its grounds are comparatively large, and when a further air of spaciousness and country freedom is given them by an open seaward prospect. But it would be less appropriate on a more contracted site with no frontage save towards a street.

Here villa-architecture, properly so-called, is more appropriate—houses which shall be neither city residences of the usual pattern nor true country houses, but midway between the two. No one can find fault if a Newport house, no matter how small its grounds may be, is itself large and costly. It must be this, in very many cases, or it will not fulfill its purpose. But it is a mistake to imitate in its fashioning either an English type of country house, which needs a stately park about it, or the boldly picturesque shape of some American country home which commands a wide prospect over picturesque acres of its own. Dignity is required, and, to a large extent, symmetry also; an air of sumptuousness and generous accommodation combined with a certain reserve as of a building near its neighbors and near the public gaze. The "colonial" style, which of late has been so extensively revived in many parts of the country, seems to offer, perhaps, the best type for such a house. And it seems as though here of all places we might expect to find it used, as the old town of Newport was one of the chief centres of colonial art. Nevertheless, new "colonial" houses are conspicuous by their absence. The only one I noticed is apt to be overlooked by the transient visitor, lying, as it does, in one of the older streets, half hidden by trees. This is the beautiful brick house built not long ago by Messrs. McKim, Mead and White for Colonel Edgar. It is as entirely appropriate to its place as is Mr. Goelet's house, and the difference between them is all the more instructive since the same hands designed the two.

The back of Mr. Fiske's house on Ochre Point is charming in both form and color—a happy relief in its lowness and its quiet browns from the towering outlines and strong tones which too often meet the eye. But its best feature is the wall of beautiful pinkish stone which connects it with the stable and the street. It was a wholly fortunate idea to edge the base of this wall with a narrow border of bright-hued plants, as they enliven the prospect but do not disturb it, being thus closely connected with architectural forms. And this summer the vines had grown upon the wall, as upon the house itself, to exactly the right extent—softening and adorning but not wholly concealing the surface. The great trouble in some places is to make vines grow; the great trouble at Newport is to keep them within bounds. The recent introduction of the so-called Japanese Ivy has already meant in many places the entire concealment of the forms beneath it. When these are bad the result is a happy one—a seeming wall of verdure is certainly to be preferred to an ugly fence or foundation story. But when the forms and colors are good, then their concealment detracts from beauty, while the vines themselves look best with a visible background. On Mr. Fiske's house, and on Mr. Goelet's as well, it will be a pity if the vines are ever allowed to exceed their present estate. On many other houses one might wish them to grow to the very chimney tops.

M. G. Van Rensselaer.

New York.

The Japanese Plums—The Satsuma.

SINCE I wrote of the Kelsey Japan Plum, Batankio (or Batankin, as some call it), last month, I was so fortunate as to find young trees of that most curious of fruits, the Satsuma Plum of Japan, or, as it is now quite generally known, the Japan Blood Plum, in fruit in the grounds of the University of California at Berkeley. The tree is a much stronger, smoother grower than the Kelsey; leaves smoother and more lanceolate, wide in the middle and narrowing to each end; twigs stout, long and smooth. The fruit is round, with a deep suture on one side; dark dull red, with bloom, flesh dark, bright crimson or cherry red; skin very thin, with no acidity; flesh or pulp very fine grained, very juicy, abundant free blood red juice; when fully ripe, melting and delicious. We may say, first best in quality to eat from hand when fully ripe. The Plum, when first mature, is quite firm, and will prove a good long shipper. When over-ripe, it becomes very soft, but still juicy, and not mushy. In size, the Plums examined were about the size of the native Plum known as Miner, or about the size of the well-known Green Gage, but it is said to grow much larger. The stem is longer and more slender than that of the Kelsey, which is very short and thick for a Plum. The pit of the Satsuma is quite small for the size of the fruit, roundish, somewhat pitted and corrugated.

This Satsuma very closely resembles in tree, leaf and growth a Plum tree sent east from California under the name Ogon, which proved quite hardy with me in Illinois in our severest winters, much more so than the Kelsey, and it may be that some of these fine fruits may do well in the great north-west. Since I wrote of the Kelsey last month I had some of them stewed for sauce, and found them very nice served in that way.

Many young orchards in different parts of this state of the Kelsey have fruited for the first time in quantity this year, and all report them very productive and profitable. The keeping qualities of these Plums are truly remarkable. I have before me a very large specimen of the Kelsey, gathered when fully mature, one month ago yesterday. It is yet perfectly sound.

That the Kelsey is quite near to the Peach in many of its peculiarities is plain to any one who will examine it critically. It has the stem and pit of the Peach. The pit is corrugated, pitted and shaped like that of the Peach, and the kernel has the same skin and flavor, and fully bears out the view that I had long ago formed from observation, namely: That we may expect, and that we now have, hybrids between nearly all the different species of the Almond family, and that we may look for very valuable future results from such hybrids.

Hybridism brought about by skillful artificial means should be continually striven for, though we may have 10,000 failures for each success. Given our fully hardy native Plums as a base—they lacking somewhat in self-pollenization, making them easy to experiment with in this line—should give the north-west in time some good, fine hardy fruits.

The high mountain regions of northern California have some fine native Plums that may prove of value in this work. But it is best for those who work for the great north-west to stick pretty close to the wild Plums of the northern part of that region. Some of them are really fine, valuable fruits in their wild state and capable of endless improvement.

The Plums proper, those of the European type, are not proving as profitable in California as the other members of the Almond family. They nearly all do finely and bear enormous crops of magnificent fruit, but are too acid when canned or dried, except the Prune section. Of these the sweet, raisin-like French Prune, the Petit Prune de Agen, is grown in great quantities, and is still being more largely planted than any other fruit. The tree is a strong, healthy, handsome grower, wonderfully productive; the fruit very sweet and easily dried into the Prune of commerce. The crop is very regular and certain. An item before me gives the yield of an orchard in Tulare County, only four years old, at 300 to 500 pounds to the tree. At the lowest price Prunes have sold at on the tree this season, a cent and a quarter a pound, and at the lowest figure of product as given, to wit, 300 pounds, we would have a net return from this orchard of \$375 an acre, and this in Tulare County, which, twelve years ago, was considered a worthless arid desert.

But give the exceeding rich soils of these so-called deserts a little good water from the mountains and we have at once the fruit growers' and fruit tree and vine paradise, where nearly all the fruit-bearing trees and plants will grow and thrive wonderfully, and where great commercial fruits, such as the Raisin Grape, Prune, Peach, Nectarine, Apricot, Fig and Pear, can be perfectly dried in the open air cheaper and better than anywhere else in the world where they can be grown with success. And this is not all. In the hot, dry, even morning air of the great Joaquin Valley, but very few of the insect enemies, so injurious to fruits, can propagate, and none—yes, we may say *none*—of the destructive moulds, blights and rusts, so destructive in moist climates, can there exist. Sun-dried fruit there is as perfect, from these reasons, as the very best evaporated fruit east.

Over 500,000 acres have just been redeemed from the sway of the Jack rabbit in Merced County, by the great Crocker and Heffman canal, costing a million and a half of dollars. This adds that amount of the very best of soils in one of the best fruit regions in the state, in a fine, healthy climate.

D. B. Wier, in *American Florist*.

"Gardening, in the perfection to which it has been lately brought in England, is entitled to a place of considerable rank among the liberal arts,—it is an exertion of fancy, a subject for taste; and being released now from the restraints of regularity and enlarged beyond the limits of domestic convenience, the most beautiful, the most simple, the most noble scenes of nature are all within its province; for it is no longer confined to the spots from which it borrows its name, but regulates also the disposition and embellishments of a park, a farm, or a riding; and the business of a gardener is to select and to apply whatever is great, elegant or characteristic in any of them,—to discover and to show all the advantages of the place upon which he is employed; to supply its defects, to correct its faults and to improve its beauties. For all these operations the objects of nature are still his only materials."—From Thomas Whately's "Observations on Modern Gardening," London, 1770.

New or Little Known Plants.

Pentstemon rotundifolius.*

TO the red-flowered Pentstemons, which are among the most ornamental species of this showy genus, Mr. Pringle last year made an interesting addition, of which Mr. Faxon has now given us an excellent figure. As found growing from the crevices of cliffs in the mountains about Chihuahua, with its large panicles of scarlet flowers drooping over the rocks, its habit seems very unique. In the character of the flowers it appears to be most nearly related to *P. centranthifolius* of Southern California and Arizona, having the same narrow, tubular corolla, with a nearly equally lobed, erect limb, though in this respect it is also much like *P. Eatoni*. The plant is very glabrous and glaucous throughout, woody at base, and the stem quite leafy. The thick leathery leaves are rounded and entire, and, except the lowermost, are closely sessile. *Pentstemon rotundifolius* flowered during the present season in the Royal Gardens, Kew, from seed collected by Mr. Pringle.

S. W.

Foreign Correspondence.

London Letter.

THE season has come when not a single important class of plants is in full bloom. I went through some of the great nurseries this week, and was surprised to find them so flowerless. Chrysanthemums, which from November through the winter occupy the attention of all gardeners, have, it is true, a few very fine forerunners, which tend to enliven our green-houses, and it is satisfactory to see that every season brings new early varieties of this flower. Frenchmen seem to be very active just now in raising new October-blooming sorts of the Japanese and other large flowered sections, and at the meeting of the Royal Horticultural Society on Tuesday last there was quite an array of new varieties, of which four only were considered worthy of first-class certificates. Having regard to the enormous number of varieties now in cultivation, and the obvious difficulty in comparing the new with the old, the committee are wise in not awarding certificates precipitately. Of the four certificated, the finest by far was one called Sunflower belonging to the Japanese section. It has large flowers and very long florets, which hang gracefully like a tassel. The color is the brightest yellow imaginable. It was shown by W. Holmes, the Secretary of the National Chrysanthemum Society, who considers it not only the finest early yellow, but one of the best of all yellow Chrysanthemums of its class. Another first-rate novelty is Lincoln's Inn. It is a large flower with shortish florets, which are a rich, brown crimson on the upper side, and yellowish below. Edwin Molyneux, also certificated, is a large and not very beautiful flower, being coarse in the opinion of many. It is like that named Comte de Germiny, but is of a brighter chestnut-crimson. The fourth sort was Magicienne, with large flowers and reflexed florets of a reddish orange hue. Besides these a fifth sort named Capucine was selected on account of its floriferousness. The flowers are small, the color bronzy orange, and the habit of growth good. It is called a "decorative variety." Among the other new sorts shown I singled out the following (all Japanese sorts) as the best: C. J. Quentus, pink; Charlotte de Montcalrier, long florets, pink; Madame C. Souchet, chestnut-crimson, reflexed; Othello, yellow and crimson; C. Wagstaffe, good, large, pure white; T. Stevens, pale pink; Mad. Louise Leroy, white and pink; and C. Delmas, crimson. Some of these were scarcely forward enough to allow us to judge adequately of their merits, and consequently were passed over by the committee.

A few Orchids of exceptional interest were shown, and three of them were certificated. The most remarkable was the *Cattleya Lamberhurst Hybrid*, a cross between *C*

citrina, which always grows downwards, and has large, wax-like flowers of deep yellow, and *C. intermedia*, a well-known old species. The hybrid has its growth with a decided downward tendency, the flowers are not so large as those of *C. citrina*, the sepals and petals are blush-pink, while the labellum is prettily marked with rose-pink and white. Though not a gorgeous Orchid, it is extremely pretty, and possesses a great interest for growers. Another new hybrid, also raised by the late Dr. Harris, of Lamberhurst, was *Cattleya Harrisii*, a cross between *C. Mendelii* and *C. superba*. In this case, too, the characters of the parents are strikingly blended in the cross. The flowers are about as large as those of *C. superba*, and resemble those of that species in form. The sepals are rose-colored, the broader petals deep rose, while the lip is a beautiful crimson-carmine. These two hybrids came from Baron Schroeder's rich collection at Egham, and are extremely rare. Another certificated Orchid was a new *Oncidium*, shown under the name of *O. Mantieri*. It is a supposed natural hybrid between *O. Forbesi* and *O. Marshallianum*. It much resembles the first named in growth and in flowers, though there are evident traces in its features of the showy yellow of *O. Marshallianum*. It will, no doubt, prove a valuable plant if it habitually flowers in October, when Orchid-houses require enlivening.

One of these Orchids came from Messrs. Veitch, who also won a certificate for their new Javanese Rhododendron named Yellow Perfection, which is far the finest pure yellow sort yet raised. The truss is enormous, and the flowers are two inches across, with broad, overlapping petals which are of the clearest chrome-yellow. Messrs. Veitch themselves think that this is one of the greatest strides they have made in this race of green-house Rhododendrons. These shrubs are now a most important class of green-house plants, and, since their culture is becoming better understood, they are becoming popular in all good gardens. In an intermediate house, not an ordinary green-house, they require the simplest treatment, and they may be called perpetual bloomers, as they seldom are out of flower. At Veitch's nursery one can see, at the present time, a large house full of flowering specimens, representing a large number of sorts, every one beautiful. In color some of the older kinds have not been excelled by the newer hybrids. None are now more pleasing in color than the old Taylori, one of the earliest hybrids, and Princess Royal, also one of the first. But the improvement has been in size of truss and bloom, as well as in the shape of the flower. I look upon these Rhododendron hybrids as one of the best among the many great things accomplished by the Veitches during the present generation, and their name will always live in connection with these beautiful plants. The great desideratum now is a new Rhododendron of a distinct color which would hybridize with the present race.

London, October 25th, 1888.

W. Goldring.

Cultural Department.

The Flower Garden.

AS our garden is on the north shore of Long Island, it is not visited by frosts so early as are those of our more inland neighbors, and this year has been exceptionally mild. Until to-day, Nov. 15th, but two slight frosts have occurred. The garden, therefore, is still gay with the blossoms of many plants.

Chrysanthemums are now in their glory, and make a magnificent display where massed in banks against the south side of buildings, and even in open garden beds where they have been grown all summer. Wind and rain batters them about and injures the flowers if left unsupported, but where well tied up to a stake, the flowers are held steady and kept clean, and are in fine condition. Under out-door cultivation the colors are deeper than when the flowers are produced under glass, and in the case of some white-flowered varieties like Domination they display quite a lilac or purple tint. With Elaine, Fair Maid of Guernsey and some other whites, however, this rule does not hold good. Among our finest out-door varieties this year are Gloriosum, Gloria Mundi and Golden Dragon, yellow; Elaine, Jessica, Falconer's Early, Domination

**P. ROTUNDFOLIUS*, Gray, *Proc. Amer. Acad.*, xxii, 307. *Gardeners' Chronicle*, 3 ser., iv, 264, f. 31.



Fig. 73.—*Pentstemon rotundifolius*.—See page 472.

and Mrs. N. Hallock, white; Julie Lagravere, Cullingfordii and J. Delaux, crimson; Lakme and R. Walcott, red; Brazen Shield, Source d'Or, Early Red Dragon, and Incomparable, golden bronze; and Roseum Superbum, Mrs. Talford, Admiration and M. Panchenan, shades of purple. For an abundance of blossoms the named varieties are far inferior to our this-year's seedlings. Some of these are poor enough and some are good, but the unusual vigor of the plants and the immense masses of flowers they are bearing more than compensate for their ordinary quality.

A few years ago a large-flowered form of *Chrysanthemum segetum*, the European Corn Marigold, was introduced by seedsmen as a novelty. Although it is a very bright and pretty flower, it is a bad weed, and self-sown seedlings come up all about the garden where the old plants grew. Just now it is one of the brightest flowers in our garden, and the frost has not hurt it a particle.

The Meteor variety of the Pot Marigold is finer now than it has been before this year. It is from midsummer sowings. This flower, Mignonette, Sweet Alyssum, Pansies and Czar Violets, keep on blooming throughout the month of November, or even longer if they are not subjected to more than seven to ten degrees of frost. Zinnias and Heliotropes have been destroyed by frost, and African Marigolds, of which the Eldorado strain is a good type, have been considerably injured. The dwarf striped French Marigolds, however, keep on blooming as if it were yet only September, instead of November. Frost injures the flowers, but the unopened buds escape, and soon bloom out and renew the display.

Among Gallardias all the annuals are so far past as to be not worth keeping longer, but the handsome large-flowered varieties of *G. aristata* are still in excellent bloom. Two Centaureidiums, *C. Drummondii* and *C. Texanum*, both yellow-flowering composites, have been in bloom since midsummer, and are now in finer flower than they have been at any former period. *Coreopsis coronata* and *C. tinctoria* still supply a fair display of blossoms, but all of the other annual and perennial species are done blooming. *Rudbeckia bicolor* from June sowings is very showy and full. *Erigeron speciosum* is yielding a fair second crop of flowers; so, too, are the Red Valerian, Double White Feverfew and Indian Pinks. Summer sown Snapdragons have a few good flowers, and *Tagetes lucida* is finer now than it has been all summer.

The dwarf blue Alkanet is very fine; so, too, is *Cosmos bipinnatus*. For October flowers this *Cosmos* is one of the finest things ever introduced to cultivation. It blooms abundantly; its flowers are large, showy white or rose-purple, and last well when cut. The greatest fault of this noble Mexican annual is its habit of blooming so late in the season and its tenderness, for a degree of frost will ruin it.

One of the brightest and prettiest red flowering plants now in bloom in our garden is *Alonsoa Warscewiczii*. It can be treated as an annual raised from seed sown in spring and planted out over summer. It is now blooming more copiously than it has been at any other time of the year. Slight frost does not hurt it. Drummond Phlox is still abundant, but the plants are mildewed, and therefore the flowers are curtailed in proportion.

Christmas Roses (*Helleborus niger*) seem to be a little early this year; bunches of white flower-buds have risen some eight or nine inches above ground, but none of them are quite open yet.

Most of the summer tender vines have been killed down and cleared away. But *Manettia bicolor* is still studded all over with yellow-tipped scarlet flowers, and purple blossoms hang thickly upon the *Maurandia Barclayana* growing on a fence. *Cobaea scandens* raised from seed sown last March has run more than twenty feet over and along a high trellis fence, and is still full of its purple bell-shaped flowers and drooping seed-pods. A stretch of Lobb's Nasturtium (*Tropaeolum Lobbianum*) along a fruit-tree border in front of a south-facing wall had the leaves scorched a little by frost, but all the flowers that were protected by the peach shoots and Nasturtium foliage are bright and perfect.

Sphaeralcea Emoryi is a little plant which is still in good bloom, as it has been for a long time. It is a hardy perennial from the eastern slope of the Sierra Nevada, and has small terra-cotta red flowers in copious quantity. Perennial Larkspurs, Tritomas and Salvias still yield some flowers.

Glen Cove, L. I., Nov. 17th.

Wm. Falconer.

New Hardy Hybrid French Gladioli.

HAVING again, during the summer and autumn now drawing to a close, grown, for study and comparison with older varieties, the set of ten new hybrids of the *Purpureo-auratus* crossed with *Gandavensis* race, distributed towards the close of last year by M. Victor Lemoine, of Nancy, some notes as to their respective merits and beauties may perhaps induce others to cultivate these beautiful and easily-grown, hardy, bulbous plants. The comparatively cold and almost sunless summer we have had this year has in no way interfered with, but has indeed been far more suited to the growth and perfect blooming of these plants than the torrid season and long drought to which they had to submit last year, which prevented many of the varieties of that year from coming to perfection at all. The ten varieties belonging to 1888 are:

BOUSSINGAULT.—This commenced to bloom on August 1st, and is a very strong grower, producing three flowering bulbs from one. It has medium-sized, creamy yellow flowers, with most distinct and beautiful, clearly-marked lower petals, the outer half of which is deep canary yellow, the inner half deeply feathered maroon. This beautiful variety, also Louis Van Houtte and Oriflamme, were well figured on the colored plate appearing in the *Paris Revue Horticole* for May 16th, 1888.

DE HUMBOLDT is a vigorous-habited variety with good-sized flowers opening well together on the spike, and thus showing a good many flowers in full beauty at the same time. The color is a deep rosy salmon, with clear yellow under-petals, distinctly blotched with light maroon.

EMILE GALLE is rather a slender-growing variety which, in the bud state, promised to be of quite a novel shade of violet not hitherto met with in these hybrids, but on the expansion of the flowers they proved to be washy and pale in color, thin in texture and deficient in form. Only the lower petals are beautiful, being of a deep shade of violet with a thin line of gold down their centre. It is quite possible, however, that this, being quite a new break in color, may prove the parent of many beautiful varieties in years to come.

EUGENE LEQUIN is a variety of medium height, with pale lemon-colored flowers distinctly marked on the lower petals with broad blotches of velvety carmine, and is altogether an extremely pretty flower.

E. V. HALLOCK is a vigorous growing variety, and one of the most beautiful of the whole series, with large fully opened flowers of a clear, pale shade of canary yellow, the three lower petals clearly and evenly blotched with pale carmine. This should be in every collection.

LE HORLA.—A rather weak-growing variety, with flowers under the medium size, of a pale shade of red. The three lower petals are yellow, distinctly blotched with carmine, and the centre one edged with pale red. The flowers of this variety may come larger on a stronger plant.

MIRABEAU.—A rather weak grower, with large, well-expanded flowers of a somewhat dull shade of yellow, faintly flamed with carmine, and with broad and most distinctly marked blotches of deep maroon on the lower petals.

LOUIS VAN HOUTTE.—This is a rather dwarf-growing variety, with medium-sized, well-expanded flowers of a pale yellow shade of color, faintly blotched with carmine on the lower petals. The flowers open well together on spike.

ORIFLAMME.—A vigorous, tall-growing variety, with branching flower-spike, and producing deep rose-colored flowers, blotched with carmine on the lower petals.

VICTOR MASSÉ.—This is a washy, indistinctly colored and worthless variety, which did not, I think, deserve a name.

The seven varieties distributed at the end of 1886, and which I was unable to describe adequately last year, were:

MONS. A. THIERS.—This is a very pretty variety, of rather vigorous habit, with medium-sized, well-opened flowers, which are rather far apart on the spike, of a clear shade of deep rose, flaked with carmine. The lower petals are clear canary yellow, edged with rose and blotched with maroon.

MARQUIS DE SAPORTA is a variety with medium-sized scarlet flowers, with a lighter throat, and are closely set on the spike and open well together. The lower petals are rather indistinctly flaked with maroon-yellow.

MONTESQUIEU is a tall and vigorous grower, with large, well-expanded, light red flowers, flaked with carmine. The lower petals each bear a distinct and pretty flame of deep rose color tipped with yellow.

DE CHERVILLE.—This is a vigorous grower of medium height of spike, with flowers rather under medium size, of a rather dull shade of deep rose color, somewhat indistinctly flaked with maroon and yellow.

BRACONNOT.—A variety of medium height and not very

vigorous habit of growth, with medium-sized blooms of a deep shade of scarlet, prettily flaked with canary-yellow on the lower petals.

GOUNOD.—A rather weak-growing variety, with flowers of a rather dull shade of yellow, faintly shaded with rose color. The two lower petals are evenly divided between deep velvety maroon and clear canary-yellow, the latter outside.

JEAN JACQUES ROUSSEAU.—A variety with pale orange-scarlet flowers distinctly blotched with carmine on the lower petals; each blotch is edged with pale yellow. This is an exceedingly pretty variety.

M. Lemoine again sends out this winter fifteen more varieties of this race of hybrids. He has not, however, yet been able to get up sufficient stock of the beautiful new race of hybrids he has obtained by crossing *G. Saundersi superbus* with some of his own *Purpureo-auratus* race; of these he hopes to be able to distribute one or two varieties towards the end of next year. Another foreign nurseryman, M. Otto Frœbel, of Zurich, has also obtained some bright and pretty hybrids between *G. Saundersi superbus* and *G. Gandavensis* which he hopes to distribute shortly.

W. E. Gumbleton, in *The Garden*, London.

Ferns for the Window Garden.

ONE of the most common causes of failure in window gardening is unsuitable selection of plants. In fact, this is the principal cause, for, where man can live, some species of plants will thrive. After the Chrysanthemum is out of bloom, scarlet Pelargoniums, or some other flowering plants with bright colors, are generally selected for the window-garden. These cannot succeed where we cannot or will not allow clear, full sunshine. The living-room rarely affords this sunshine, which is necessary to the production of vivid color.

Most plants that have reveled in full light and pure air during the summer soon lose the bloom of health when brought into the living or sleeping room; they lose their strong, fleshy leaves, they become emaciated, and sicken and die.

For rooms where there is but little light, where the sun makes only a formal call once a day, Ferns will thrive luxuriantly, and the more beautiful species appear to thrive the best. As a family the Adiantums surpass all the others in graceful beauty, and of the species few can compare with the noble *A. Farleyense* or the delicate *A. gracilis*. These two I have grown with perfect success in the room of an invalid, when at times there would be but little light and hardly any full sunshine during the entire winter. So well did they succeed, that in spring they would have been given a prominent position at a Fern exhibition. In the same situation no flowering plants could be induced to grow; in fact, none were wanted, for none are as cheerful or restful to the weary eye as the delicate Adiantums. Some of the Adiantums make charming basket-plants; conspicuous among them is *A. Edgeworthi*, whose delicate fronds, when young, wear a lovely pinkish hue, gradually shading into a pale grayish-green.

If a climbing plant is wanted for the house, the Fern family will furnish this, too, in the *Lygodium scandens*, and a more beautiful plant, or one more easy of management, cannot be found. While it is a favorite in the green-house, and most useful for decorative purposes, it is well adapted to house-culture, as it requires but little light, and is not injured by gas or furnace heat, so fatal to most plants. It is a rapid grower, and with proper management can be made to complete its growth in summer, after which it can be introduced into any moderately cool room in the house, where it will remain an object of beauty the entire winter. There are scores of Ferns besides those named that are adapted for the house during winter; in fact, most Ferns do well, but none, I think, are as beautiful as the ones noticed. In using Ferns for the window one caution must be observed. Well-established plants must be secured to begin with. In their young and growing state they require a more humid atmosphere than the house affords, a condition that is not essential when the plant is fully developed.

Garden City, N. Y.

C. L. Allen.

Cosmos hybridus.—This valuable plant was introduced some years since into this place and is now a conspicuous ornament of many humble cottage gardens. It is, perhaps, a hybrid of *C. tenuissimus*, but, more probably, only a garden variety. This plant grows here to a height of six or seven feet, but I have seen specimens at least eight feet high. The finely cut leaves are very attractive. The flowers—pure white or pale rose colored and single—are about two and one-half inches in

diameter, with crimped and fimbriated petals, and are produced in great abundance in terminal bunches. They have a pleasant, faint odor, but can hardly be called fragrant. The plant is easily grown from seed, which may be planted in the open ground in May, though it would certainly be much better to plant early in April in a hot-bed. Judging from the plants which I have myself raised, as well as from all those which I have seen, it would be very advantageous to pinch in the shoots at an early period of growth, so as to make them more bushy and to cancel the tendency toward a somewhat loose and sprawling habit. Here, in Newport, *Cosmos hybridus* begins to bloom early in October. My own plants, which were raised from seed grown in the open ground about May 20th, are now, November 9th, in full bloom, and yield a daily supply of charming flowers, worthily succeeding *Anemone Japonica alba* and *rosea*, which the large blossoms somewhat resemble. Though a Mexican plant, *Cosmos hybridus* resists the early autumn frosts remarkably well. Dahlias were cut down by frost in my garden ten days since. In the absence of any information as to the parentage of this plant, I suggest that, possibly, some fine dark colors could be obtained by hybridization with *C. bipinnatus*. The great value of the plant as a late autumn bloomer will soon lead to its general culture.

W. G.

Newport, Rhode Island.

Pantratum speciosum belongs to a genus which is not grown so extensively as it deserves. The plants are mostly of easy culture, and with little trouble will produce abundant flowers. *P. speciosum* is one of the best of the genus, producing, in early winter, large umbels of pure white and very fragrant flowers, which last a long time in perfection. Even when out of bloom the plant is quite handsome, each bulb having four to six large, ovate, deep green leaves. The new leaves appear with the flower-spikes, and until they are thoroughly matured the plants require very liberal treatment—strong heat and abundance of water—and if the pots are well filled with roots, liquid manure should be given regularly. During the summer months the plants may be set out-of-doors in a shady spot and kept as dry as practicable without causing loss of leaves, which I think are better retained as long as possible. For potting material a mixture of sandy loam with a little leaf-mould will be found good. Pot firmly, and use large pots, so that repotting will not be necessary for some years.

Cymbidium Hookerianum is now bearing three racemes of flowers. In habit it much resembles *C. giganteum*, though much smaller; the leaves are a dark green, with streaks of yellow near the base. The semi-pendent racemes spring from the base of the matured bulbs, bearing about a dozen large flowers of a yellowish green, with the straw-colored lip blotched and spotted with crimson. The front lobe is very crisp. This species was introduced in 1866 from the Sikkin Himalaya, and should be grown in the cool house, with liberal waterings during active growth, and should at no time be kept dry. We use a compost—loam, peat and sand in equal parts. The plant grows very freely, but seldom blooms, and the flowers here are probably the first that have been seen in America.

F. Goldring.

Kenwood, N. Y.

Orchids in New York.

THE fine collection of Mr. Hicks Arnold on Eighty-fourth Street, in this city, occupies a lofty, span-roofed structure, which formerly was filled with Palms, Ferns, etc. The temperature of the house is kept as near as possible from 60° to 65° by day, and 10° lower at night. The plants have made good growth during the past summer, and promise abundant flowers. Orchids in bloom are rarely seen in quantity at this season, but at a recent visit I observed several worthy of note in flower, and among them a beautiful form of *Cattleya Dowiana*, with rich, well-developed blossoms, the sepals and petals being of a charming buff-yellow, the broad, dark purple lip handsomely veined with the brightest golden-yellow. A specimen *C. Gigas*, suspended from the roof, had produced five flowers of great size and of good substance, and the plant still has six newly-made flower-sheaths, which in a few weeks will make a grand display. Other *Cattleyas* soon to flower were fine plants of *C. Skinneri alba*, *C. Trianae alba*, the deep purple-flowered *C. Lawrenceana*, a strong-growing plant of the pretty yellow *C. luteola*, and a number of *C. Trianae* and *C. Mendelii*. Well-grown plants of *Laelia Perrinii*, in position near the glass, had a number of sheaths, and several were already in bloom. *Laelia purpurata* and *L. elegans* were represented by strong specimens, and a plant of the showy *Laelia Patinii*, which had made very stout growths, was well furnished with flowering

sheaths. In habit this *Laelia* resembles *Cattleya Skinneri*, and is a species of easy culture. Quite a fine selection of *Cypripediums* were growing very rapidly on the north side of the house, and among many others was the beautiful *C. Morgania*, a plant of *C. grande*, with foliage of a remarkably robust character; *C. ananthum superbum*, the new Hybrid *C. Godseffianum*, said to be a cross between *C. hirsutissimum* and *C. Boxalli*; *C. Io* in bud; *C. alium*; strong plants of *C. Curtisii*; *C. Leeanum superbum*, showing flower; *C. Shlemii album*, *C. Veitchii*, *C. praestans*, *C. Lawrenceanum biflorum* in bloom, and a fine example of *C. albopurpureum*. A number of *Dendrobiums* were looking at home at the warmest end of the house. Specimens of *D. Wardianum* were just completing their new season's growth, having bulbs measuring some four feet in length. A plant of *D. nobile Sanderianum*, said to be the finest of all this section, was doing well in a teak basket, having made a very stout lead, and with it were plants of *D. Ainsworthii* and *D. Leechianum*, both scarce and very showy. Flower spikes were showing in quantity on well-grown plants of *Phalænopsis*, including *P. Sanderiana*, *P. Schilleriana* and *P. amabilis*, and the lovely *P. tetraspis*, with its blossoms of the purest white. A beautifully-grown specimen of *Angracum Scottianum* had just passed flowering, having produced as many as thirty snow-white blossoms. A large plant of *Angracum eburneum* was specially noticeable, with twelve strong spikes from four sturdy growths, and during the months of January and February will make an effective show. *Vandas* and *Arides* were hanging in numbers from the roof, and were pushing their roots to the outer surface of the baskets, enjoying the moist and warm atmosphere so beneficial to them. A fine example of *Vanda cerulea* had produced a stout spike, and will bloom very shortly. Several well-grown plants of *Arides Lawrenceana*, *A. Sanderianum*, *A. Houletianum* and others were exceptionally fine, with foliage of a very deep green. The *Odontoglossums* that were enjoying this temperature were *O. Roezlii*, *O. vexillarium*, and a plant of the chaste and pretty *O. Warsceviczii*, which was rooting freely in a glazed pan, and suspended near the glass in close proximity was a large plant of *O. Phalænopsis* in bloom, its white and violet-crimson markings strikingly effective. A lean-to structure of small dimensions contained a group of the cooler species, including some strong plants of the *Odontoglossum crispum* type, *O. Pescatorei*, *O. crestatellum*, several already being in bud.

During the past summer a number of plants were subjected to out-door treatment with very satisfactory results. A light, open, frame-work structure, some twenty-five feet long by ten wide, was erected on the lawn, with a stage for the plants three to four feet from the ground, the only covering being a sheet of the thinnest canvas to protect them from the direct rays of the sun. Above this was fixed another roll of very stout cloth, nearly water-proof, which was immediately let down when cold winds or storms were expected. In this way the following plants, amongst many others, have made rapid and unusually fair growth, viz.: *Odontoglossum Alexandrae*, *O. Pescatorei*, *O. citrosimum*, *O. grande*, *O. Rossii*, *O. Harryanum*; all the varieties of *Laelia anceps*, *Oncidium ornithorhynchum*, *O. tigrinum*, *O. incurvum*, *O. varicosum*, *O. Marshallianum*, *O. sphacelatum*, *O. Cavendishianum*, *Laelia autumnalis*, *L. albida* and *L. majalis*, *Ada aurantiaca*, *Cypripedium insigne* and its varieties, *Calogyne cristata*, *Lycaste Skinnerii*, *L. aromatica* and *Masdevallias* in variety. The plan is very cheap and simple, and is well worthy of a trial, as it will be the means of preserving many of our cool-growing species during the extreme summer heat, which is so detrimental to the growth of the plants.

A. D.

The Lawn.—Should time and weather permit, lawns should now be raked clean with wooden rakes, so as to remove stones, dead grass, and leaves. This lessens the work in Spring. And in spots where the grass has been choked out by Sorrel, Mouse-ear Chickweed, common Chickweed, Creeping Speedwell, or Moss, rake off as much of the weeds as possible with a steel bow-rake, then mulch over the places with a heavy dressing of manure or compost. Rotted cow manure is the best for this purpose, as it is full of seeds of pasture grasses, and these come up so thickly in Spring that it matters little whether the bare spaces are resown or not. If lawns are to be top-dressed with manure, this is the proper time to do it, for in frosty weather carts can be driven over them without leaving wheel-prints in the soil. The dressing should by all means be scattered as it is hauled out on the grass, otherwise a stiff frost may come and prevent its being spread at all this season. Let the manure used for dressing be old and rotted fine.

G. C.

The Live Oak.

THE Live Oak (*Quercus virens*) is a familiar object to all persons acquainted with the vegetation of our south Atlantic and Gulf States. It is a large tree, although rarely growing to a greater height than fifty feet, with a short, thick trunk, sometimes seven or eight feet in diameter, and spreading, curved and often twisted branches. The trunk, which is covered with a deeply furrowed and very dark bark, often divides near the ground into several large branches, as in the characteristic specimen which appears in our illustration below, and which is growing near New Orleans. Sometimes the trunk does not divide until it has reached a height of twelve or fifteen feet, when it sends out immense horizontal branches which have

ascends to an elevation of nearly 8,000 feet. It is found on the coast of Guatemala and in Costa Rica. The Live Oak attains a great size and is very common upon the Sea Islands of the Carolinas and Georgia and upon the adjacent mainland. It is common, also, upon the Gulf coast east of the Mississippi. The distribution of this tree is interesting and not easily explained. Abundant on the humid coast of the south Atlantic States, which must be taken as the region of its greatest multiplication and development, it is able to endure the extremely arid climate of western Texas, where few broad-leaved trees can maintain a foothold. There are but two trees, moreover, so far as is now known, belonging to the real North American flora, which extend into the tropical climate of Central America—the Live Oak and *Pinus Cubensis*. The latter,



Fig. 74.—The Live Oak (*Quercus virens*).

been known to shade a space more than a hundred feet in diameter. The leaves are from two to three inches long, oval-lanceolate, obtuse, with entire and strongly revolute margins, or sometimes, upon vigorous young shoots, sharply toothed. They are coriaceous, dark green and lustrous on the upper, pale and pubescent on the lower surface, and remain upon the branches for twelve months, falling as the leaves of the succeeding year unfold. The cup is top-shaped, hoary, long-stemmed, and encloses the base only of the oblong, dark chestnut colored or nearly black acorn, which rarely exceeds an inch in length.

The Live Oak is found growing in the neighborhood of the coast from southern Virginia to Mexico; in Texas, west of the Trinity River, it extends into the interior, often as a low shrub, as far as the high mountain ranges in the western part of the state and into northern Mexico, where it

although it is not found quite so far north as the Live Oak, is confined to the seaboard from Carolina to the Mississippi, and then reappears upon the coast and on the uplands of Honduras and on the Guatemala coast.

The value of the wood of the Live Oak in ship-building was recognized soon after the settlement of the Southern States, and after the acquirement of Florida by the government of the United States, it created a number of reservations upon the west coast of the peninsula for the purpose of maintaining a supply of this wood for naval construction. It is very heavy, hard, tough and strong, of a light brown or yellow color, and susceptible of a beautiful polish. The large branches, often growing nearly at right angles with the trunk, made the strongest and best ribs for large ships which could be found; and at one time there seemed a probability that all the large specimens of this

tree would be destroyed for this purpose. The substitution of iron for wood in ship-building has saved, however, the Live Oak. The trees are too hard and too difficult to cut down to make them very available for fuel; and the wood, although unsurpassed in beauty by that of any other American Oak, is not much used in cabinet work, for which it is well suited, owing to the difficulty of working it.

"The Acorns," old Mark Catesby tells us, writing more than a century and a half ago, "are the sweetest of all others; of which the Indians usually lay up store to thicken their venison-soup, and prepare them other ways. They likewise draw an Oil, very pleasant and wholesome, little inferior to that of Almonds."

The Live Oak is perhaps the most ornamental of all North American trees in cultivation. It grows very rapidly when young, more rapidly, indeed, than most Oaks; it thrives in nearly all soils, even when its roots are washed by sea-water during periods of high tides; but to develop all its beauties it should be planted in deep alluvial soil or upon the Carolina phosphates. A few old avenues of noble Live Oaks, and some single specimens in different parts of the South, especially in the coast region of South Carolina, are certainly the most stately and majestic trees which men have planted in North America.

C. S. S.

The Forest.

Swiss Forest Laws.

THE Report of Mr. Conway Thornton to the British Foreign Office, on the Swiss Forest Laws, is a careful and interesting piece of work. From a summary which appears in a late number of *Nature* it is evident that from a very early date the various cantons endeavored to preserve the forests. Thus, in 1314, the authorities of one forbade "the felling, floating or selling" of timber from the Sihlwald; in 1339, another forbade charcoal-burning near the chief towns. Industries using wood were restricted in their operations; the laying out of new vineyards was prohibited under heavy penalties for centuries; and finally, during last century, the use of uncloven vine-props was forbidden. The exportation of timber took place only under great difficulties, and even the removal of timber from one place to another in Switzerland was, until 1848, very much restricted. In 1376, Zurich forbade clearings to be laid down in pasture, and Fribourg would not allow sheep-pastures to be established in clearings. Goats were not permitted to be let loose in the woods; and rosin-scrapers were excluded from many of the forests. None of these numerous decrees appear, however, to have had much effect, the very number of them testifying to their powerlessness to check the evil.

In 1702, prior to which date attention was paid solely to the maintenance and protection of the timber, the Government appointed a Commission to inquire how the forests might be best preserved, enlarged and improved; and subsequently issued a decree carrying the recommendations of the Commission into effect. In 1725, Berne followed the example of Zurich, and published forestry orders, which contained directions for the cultivation of timber and for permanent improvements. Similarly, in other cantons, improved systems were introduced; the compulsory planting of marshy meadow-land was decreed; a season was set apart for felling, the growth of Oaks was recommended, and the formation of clearings was forbidden. In 1755, an excellent forestry code was drawn up by Joseph Wilhelm, Prince-Bishop of Bâle. About 1760, two scientific societies—the Physical Society of Zurich and the Economical Society of Berne—made great efforts to introduce improved knowledge of woodcraft into Switzerland, and with this object they made strong representations to their respective Governments, and the Forestry Decrees of 1773 and 1786 were the results. The substance of these decrees may be stated to be the surveying of forests, the appointment of officials who would supervise planting, experiment on exotics, and help in teaching a more scientific system of wood cutting. By means of these measures some real progress was made, which, however, was stopped by the general confusion during the beginning of this century; but when peace was restored, the Helvetic Government turned their attention again to the forests, which by this time had suffered severely. Soleure was the first to start a system under which technical instruction was given to two citizens from each woodland district, the better

qualified being chosen foresters. From this time until 1830, forest laws were drawn up universally, prescribing the modes in which timber was to be felled.

In consequence of the disastrous floods in Switzerland in 1830 forest laws were more generally enacted and more rigidly enforced than they had ever been before. The number of officials was increased, and great attention was paid to their training. In fact, the spread of the science of forestry in Switzerland dates from this period. At first the people thwarted the officials in every way, but, becoming gradually enlightened as to the utility of the government measures, they ceased from actual opposition. Even the most backward of the cantons began to realize that their true interests lay in the preservation of the forests, both as a commercial speculation, having regard to the advancing price of timber, and as a support for precipitous ground, and on account of its domestic and national uses.

Hitherto the students trained in forestry had been sent to the schools in Germany, but in 1855 the Confederation established a Forestry School, in which henceforth Swiss students were educated in the art of woodcraft and the kindred sciences. In 1858 a searching inquiry was made into the supposed connection of the forests and the course of the mountain torrents, and, as a consequence, the state aided the School of Forestry in their efforts to plant anew the ground where springs abounded, and officials were appointed for this purpose. With regard to these officials, mention of whom occurs in all the forest laws of Switzerland, we first hear of them in 1314, when, as in subsequent centuries, they were supposed to be aided by the inhabitants, every one of whom in a woodland district was sworn to disclose any breach of the decrees which came to his knowledge. The ordinary forest-keeper was generally nothing more than an intelligent wood-cutter; but when it was seen that some technical teaching was necessary, the skilled man, and, later still, the man with a knowledge of natural science and mathematics, was always preferred. In 1868 the disastrous floods gave a fresh impetus to the spirit of inquiry into the action of the forests on the rainfall and the course of the torrents; and in the revised Federal Constitution of 1874 an article was inserted giving the Federation control over the forests and waterways, and authority to interfere in any way they may think fit. Under this article two officials were appointed—the Federal Inspector of Forests, and also a sub-Inspector. The Forestry Societies unanimously adopted a programme which, being presented to the Federal Council, was embodied in the Forest Law proposed by the Council in 1875. This proposed enactment led to much discussion in the Assembly, but was finally passed by both Houses. The district to be subject to the law included not only the high mountain ranges, but also the hills bordering on the plains, as sharing in the protection afforded against floods and avalanches by the works which were intended to be undertaken in the former. The district included a tract of country in all about sixty per cent. of the whole of Switzerland, or 6,750,000 acres, about 15.8 per cent. of which was forest land. It was decided that the rights of private owners should not be infringed except in case of necessity—that is to say, where the woods of private owners were 'protecting' woods; in other words, where, on account of their position, they might have an influence on the climate, avalanches, landslips, etc. Each canton was required to maintain an efficient staff of officials; and to each individual who had received technical training an area of about 17,500 acres was assigned if in the plains, and 25,000 acres on the mountains. All the woods under official supervision, including, of course, private woods which came under the class 'protecting' woods, were to be demarcated, all clearings were to be immediately planted afresh, and where necessary new forests were to be created, the Federal treasury bearing from thirty to seventy per cent. of the cost, or, in the case of replanting protecting woods, from twenty to fifty per cent., according to the difficulty and the importance of the works, which were always required to receive the approval of the Inspector-General before the Federal subvention was granted. Anything which might endanger the utility of the forests was strictly forbidden; cattle were not allowed to graze, nor could leaves be collected except in fixed spots. To this enactment was added a 'Règlement d'Exécution,' which provides, among other things, for the course of education to be given to each student of forestry by the canton to entitle it to the Federal subsidy. Instruction must be given in the following subjects: (1) Forest-surveying and measurement in detail; calculations of the dimensions and value of single trees, and of outlying tracts of wood; road-making; safeguards against avalanches, etc. (2) Study of the different kinds of timber and of noxious plants. (3) Elementary knowledge of soils, and of

their component parts. (4) Fundamental notions of the laws of climate and meteorology. (5) Cultivation and care of forests. (6) Book-keeping and other general branches of instruction valuable for under-foresters. The Federal Government pay the teachers, who are appointed by the canton, subject to the approval of the Federal Government.

At the outset there were great difficulties in carrying out the Forest Law. There is not now in the cantons a uniform organization for carrying it out; and Dr. Fankhauser, one of the highest officials of the Forest Department, does not think that such an organization is possible, having regard to the differences in position and ideas of the various cantons. At the present time each canton possesses in a measure its own scheme of forestry organization. There are, however, two main systems in existence in the Federal district, the first of which prevails in the central, eastern and southern parts of Switzerland. Each canton is divided into districts of from 17,500 to 35,000 acres each, and over each district the canton places an officer who has received scientific training; under him are the keepers and deputy foresters, chosen by the owners from among the students of the local forestry school, and paid by them. Each deputy has about 3,000 acres to take care of, and has but to carry out the orders of his superior as to felling, clearing and replanting. In the next, however, a different system obtains. Here the country is far less mountainous, and the inhabitants industrial rather than agricultural in their pursuits. In these cantons the district forester has from 7,500 to 17,500 acres under him, and in this district he marks out all the fellings to be performed, and in fact does everything but the manual labor, which he leaves to his inferiors. In this district, where timber is very high in price, and the opportunities of sale numerous, the country is frequently reforested by private individuals, while in the other cantons the state is forced to do nearly everything.

The salaries of the forest officials vary very much in the different cantons, but even in the best paid districts the remuneration is very modest. Under-foresters receive sometimes a fixed salary, sometimes only daily wages when employed. If the former, the sum varies from \$125 to \$250. If the rate of pay is per day, which is unusual, it is generally fixed at \$1. District foresters usually receive from \$440 to \$560 a year. In Uri, however, \$600 is given, and in a few places as high as \$800 per annum. Cantonal forest inspectors receive from \$600 to \$900 a year, besides allowances, which are always given to the higher officials when traveling on duty, with the cost of the journey.

Correspondence.

The New York Chrysanthemum Show.

To the Editor of GARDEN AND FOREST:

Sir.—A flower show is hardly the place to see plants at their best. In the garden, in the field, in the green-house, or even in the living room they look better than when massed together, bottled, labeled, and stiffly contrasted in a crowded exhibition. Of course there is room for improvement in the arrangement of exhibitions—beauty might be considered a little more without any sacrifice in the way of convenience. But as it is we usually feel: These are beautiful things, but how much more beautiful they must be under other conditions.

This is especially true when Chrysanthemums are in question. As isolated blossoms some of them—not all—are very beautiful. But they need number and a particular kind of arrangement to appear at their best; for decorativeness, effectiveness, is their prime characteristic. Nor when we turn from the isolated blossom to the growing plant are we fully satisfied. The rather ragged habit of the Chrysanthemum and the comparative sparseness of its foliage seldom result in a plant which, however excellent from the cultivator's point of view, is a really beautiful object or shows its blossoms to the best advantage. To my mind the right way to see them is cut with long stems and arranged in a tall and capacious vessel. The bunch must be rather large, or the full stateliness of the flower and glory of its color will not appear; yet it must not be crowded together or the beauty of individual blossoms will be lost. Stiffly stuck in moss Chrysanthemums never look well; and massed in a tight layer on a low dish they scarcely look better. No matter how many of them there are the grouping should be light and open, that the combined grace and dignity of the spray with its many heads may not be concealed. And a tall vessel is better than a lower one, as more harmonious with the stately effect they can produce.

Nor is the material of the jar beneath consideration. Clear glass is not desirable, as it is with Roses, for Chrysanthemum leaves and stems seen in the water are devoid of grace; nor should showy colors be permitted, which would detract from the effect of the flowers. Green cut glass, or white or blue and white china, or brass or silver—these are the best possible receptacles. Usually the bunch can be so graduated that its own foliage will suffice; but in no case should very delicate foliage be added, for the Chrysanthemum is certainly not a delicate flower. Of course as Maiden-hair Fern is now so high in favor it is often used with Chrysanthemums; nothing can be much more inharmonious than its effect, yet a basket thus composed took a second premium at the recent exhibition in New York.

But if a lover of beauty could tie his attention down to individual blossoms a wonderful amount of enjoyment awaited him in this exhibition. It seemed as though Nature herself might there acknowledge man's supremacy, seeing what he had made out of the suggestion she gave in her first Chrysanthemums. What splendid miracles of development he had brought about, and along how many different lines! There were no true scarlets among the endless colors, but there was every other kind of red and brown and pink; many purples, scores of yellows; no blues, but some yellows that were almost green; and whites in infinite variety. And now these colors were pure and solid, now flashed and streaked in the most indescribable ways; and now the one ruled on the under side of the petal, a quite different one above, and yet each kept its perfect purity. Anything more gorgeous than the contrast of red and yellow thus produced in the Mrs. Wheeler, or anything more brilliant than the flashed red and orange of the Lord Byron, it would be impossible to find; while I thought I had never seen a flower of so rare and exquisite a pure yellow as the Golden Dragon. As to size, there was everything, from things as small as a gold button to things almost as big as a Cabbage. And shapes differed as widely. Some were as flat as a plate, some as round as a ball; some as solid as Artichokes, some so fragile they looked as though a breath would blow them apart. There were flowers with large, strong petals, and flowers with delicate, thread-like petals; with short ones and long ones, straight or spirally twisted, curling in or curling out, or lying in a flat row around a solid centre. There were Chrysanthemums like little English Daisies, and like Peonies, and like Sunflowers, and others that one could hardly tell from Dahlias, and others, again, that suggested nothing in the world but Chrysanthemums determined to be as eccentric as they could. It was amusing for a while to try and pick out the most beautiful ones, but the attempt was soon abandoned in despair, for there were so many types one's standard of beauty changed at every step.

Of the three great novelties of the year, Mrs. L. P. Morton may be a great triumph from the cultivator's point of view; but from that of the mere "lover of loveliness," it seemed a failure—not pleasing in its color, which is an impure pink, oddly variegated with a dull white, and in disagreeable contrast with the greenish-yellow centre; and not pleasing in its form either—which resembles that of a half-double Sunflower.

The Mrs. Carnegie, on the other hand, is superb—a perfect expression of the incurved type, neither so full as to be hard nor so loose as to lose form and dignity; variable in its manner of growth, moreover, so that no two blossoms are identical in shape, while all are beautiful; of the most magnificent dark-red shade, and truly wonderful in size. But the most beautiful of all—the most beautiful Chrysanthemum that exists—is the famous Mrs. Alpheus Hardy. Here again is the incurved type, a little fuller than in the Mrs. Carnegie, but not too solid, and not in the least stiff or artificial looking. The color is the most pure and radiant imaginable white, and the singular down on the petals adds much more than one might imagine to their beauty. This down is called "hairs," I believe, by scientific writers, or even "a glandular growth." But it is down to the eye of ignorance, and the petals look like nothing so much as the tufts which grow at the base of the wing of a swan. It has often been said of Chrysanthemums that the best of them lack the indefinable quality we call charm. They are splendid flowers, beautiful flowers, but devoid of sentiment, not charming, not poetical. No one will say this again who has seen the Mrs. Hardy. Just the addition of this downy covering to its pure white petals gives it delicacy, charm and sentiment; makes it as poetical as a Water Lily or a Rose.

George Fleming.

[Our opinion as to the merit of these novelties has

been already expressed. The flowers of the Mrs. L. P. Morton were cut from the original seedling plant, and the variety promises to be of good form and color. The Mrs. Alpheus Hardy is most interesting as a novelty. Unlike many novelties, too, it has a distinct and genuine beauty. We should hesitate, however, before pronouncing it the most beautiful Chrysanthemum in the world.—Ed.]

Paulownia Imperialis.

To the Editor of GARDEN AND FOREST :

Sir.—In 1876 I purchased a strong root of this tree and planted it in good soil with an eastern exposure, quite well protected on the west and north. The object was to confine the annual growth, from year to year, to a single stem. It made a growth of eight feet the first summer, which was cut back nearly to the ground the next spring. As soon as the buds had pushed, all but one were rubbed off. By June 1st this had made a growth of one foot. Afterwards, to ascertain its rate of growth, it was measured on August 5th and again on the 12th. The growth was precisely thirteen inches. September 23d the stem had attained a height of fourteen feet, and measured, at a foot from the ground, three inches in diameter. The massive petioles averaged sixteen inches in length and nearly an inch in diameter. The leaves were about nine inches apart, and the largest measured ten feet three inches across. All of them were nearly as large, except those at or near the top. Those splendid leaves stood many a hard wind without being much torn. The shoot towered up, during the middle and latter part of the season, above the surrounding foliage—a singularly odd and by no means unattractive object. Year after year, either in the spring or fall, this shoot of the preceding season's growth was cut off near the ground. In 1878 it made a growth nearly as great as in 1877, but during every succeeding year the growth was shorter, until, in 1887, the stump put forth a feeble shoot or so, which perished in a few weeks, and the plant was dead.

The above notes may interest those who read Professor Penhallow's remarks respecting the Paulownia in GARDEN AND FOREST of October 17th, page 406: "The Paulownia was planted (Montreal, Canada) in October, 1881. The stems have been killed to the ground each year, but the growth of each season has proved larger than that of the preceding, and this year reached a height of ten feet. The roots, which are quite hardy, appear to be gaining strength each year, and the plant is quite as well established as the one growing in the Botanic Garden at Cambridge."

I fancy, from my own experiment, that the Paulownia will not stand being cut or frozen back many years in succession.

Bergen County, New Jersey.

E. S. Carman.

Horticultural Exhibitions.

The Short Hills Orchid and Chrysanthemum Show.

THIS exhibition was really the formal opening of the United States Nurseries at Short Hills, New Jersey, and the fact that plants were displayed at home instead of being staged in a public hall, gave it an additional interest to professional visitors. The eighteen houses already built were filled with vigorous plants arranged with much taste and skill. This collection is already remarkable for Cypripediums, of which it includes 360 species and varieties, many of them rare or unique. Masses of *C. insigne*, in its various forms, filled the first house, among them being *C. insigne Chantinii*, superb in shape and color, Philbrick's famous variety, and an extraordinary novelty with a corrugated lip, the upper part of the pouch being fluted in a most interesting way. Next to these were forms of *C. Spicریانum*, of which the variety *nigrescens* is noticeable for the rich dark color of lip and petals. Here, too, were *C. Leeanum*, one of the rarer hybrids, many examples of the beautiful *C. Harrisianum*, *C. leuchorrodium*, *C. Dayanum*, *C. dilectum*, *C. Haynaldianum*, *C. Calunum*, *C. Morganiae*, *C. Io grandis*, and *C. Arthurianum*.

Near the Cypripediums was the beautiful yellow variety of *Odontoglossum Rossii*, this plant, we believe, being found only in the Short Hills collection. Flowering specimens of *O. crispum Alexandra*, *Oncidium Cramerii*, and the fragrant *Zygopetalum Mackayii* were grouped near each other. Few *Lælias* were in flower except a very dark form of *L. Autumnalis* and the delicate little *L. Eyermanii*, the new hybrid of American origin. *Oncidium splendidum*, somewhat injured

by previous exhibitions, was still interesting, since it so rarely blooms. Other well-flowered *Oncidium*s were *O. ornithorhynchum* and *O. incurvum*. A collection of *Lycaste Skinneri* showed all the varieties from crimson to pure white.

Next in importance to the Orchids were the stove plants, and foremost among these was the great display of Anthuriums. A collection of these plants lately secured from a Swiss grower includes specimens in the flowering section which are unique and as yet unknown to commerce. Crotons, Nephthes, Dracenas and Ferns fill up other houses, some of the specimen Crotons being unusually fine. The cool houses showed a wonderful array of *Primula obconica*, and there was a houseful of good Cyclamens.

The Chrysanthemums alone would have sufficed to make an exhibition, but the chief attraction was a houseful of the Mrs. Alpheus Hardy, which has been so often described. The flower shows well in a great mass, although its absolute purity of color produces an effect that is almost dazzling, but visitors never seem to tire of admiring it.

Large numbers of professional and amateur horticulturists, some of them from distant states, visited the exhibition during the week, and Messrs. Pitcher & Manda are to be congratulated on the uniform admiration expressed for their establishment and all its appointments.

Autumn Flower Show in New York.

MESSRS. SIEBRECHT & WADLEY have been successful in their venturesome experiment of holding a flower show at this season in which the Chrysanthemum is not the chief attraction. The collection at the Eden Musée consisted mainly of plants used for decoration, and they were grouped with striking originality. The prim little Japanese Garden, with hedges of Arbor Vite and graveled walks, beds of Roman Hyacinths, Pansies, Marigolds, Carnations, Stevias, Cylamens and Primulas, interested many visitors. Many neat effects were produced in the recesses along the walls, one nook being filled with well-grown Heaths, another with dwarf Orange trees, some with Orchids, others with stove plants, while Nephthes and Stag's-horn Ferns were hung about to the best advantage. A splendid specimen of *Livistonia horrida* made a fine background for one of these groups, and other show plants, like the great *Cyathea dealbata* and the wonderful *Alsophila*, a pair of superb *Seaforthias* and a fine *Areca lutescens*, were effectively placed amid a bewildering abundance of tropical rarities. Besides the profusion of Orchids and decorative plants, cut Roses of the more fashionable varieties and of exquisite quality were scattered among the Ferns, and in addition to the ever-present and always admired Mrs. Hardy, there were some excellent Chrysanthemums. Mr. John Henderson, Mr. Barr, of Orange, and Wm. Tricker, gardener to Judge Benedict, sent many of the best of these. The flowers of Mrs. Jessie Barr, a white of superb form and substance, Sunset, which is worthy of its name, Gold Lace, an odd lacinated yellow, and Mrs. Munn, a duplication of Mrs. Frank Thompson in creamy white, were the most striking.

The exhibition was well attended, especially by people of fashion. Very rarely has there been collected and displayed in this city so great a variety of choice plants in such excellent condition.

Recent Plant Portraits.

TEA ROSE, COMTE HENRI RIGNON, *Journal des Roses*, September; a handsome, free-flowering hybrid, with pale copper-colored petals, delicately shaded with rose-salmon on the margins.

LÆLIA PURPURATA, *Revue de l'Horticulture Belge*, September.

AZALEA INDICA, MISS E. JARRETT, *Revue de l'Horticulture Belge*, September; a variety raised in the Van Houtte nurseries, with very large single white flowers, faintly tinged with green; evidently a plant of very considerable merit; it received the first prize at the quinquennial exhibition at Ghent in 1883.

PITHECOCTENIUM BUCCINATORIUM, *Bulletino R. Soc. Toscana di Orticultura*, September.

ACALYPHA TRIUMPHANS, *L'Illustration Horticole*, August 31st.

PHALÆNOPSIS SCHILLERIANA, *L'Illustration Horticole*, August 31st.

DENDROBIUM MACROPHYLLUM, *L'Illustration Horticole*, August 31st.

VRIESEA WITTMACKIANA, *Gartenflora*, October 15th; a hybrid between *V. Barilletii* and *V. Moneniana*, these two species appearing also on the plate.

SYRINGA EMODI ROSEA, *Revue Horticole*, November 1st.

Notes.

A feature of the recent Pomological Exhibition in Vienna was a special display of fruits ill adapted to local cultivation, and labeled "warnings."

The death is announced of a famous Dutch horticulturist, Joshua Valk, who for no less than fifty-seven years was connected with the botanical garden in Leyden.

The shipments of Beans from southern California to eastern cities has already reached fifty car-loads. Orders are still coming in, and there is likely to be a brisk movement of the crop eastward for two months to come.

The Marshall Pear is a comparatively new variety, which ripens some ten days later than the Bartlett. Specimens of the fruit received from Mr. P. H. Foster, of Babylon, Long Island, were bell-shaped, of good size, with a smooth, thin skin, which is beautifully russeted. The flesh is white, juicy, and of excellent flavor. The tree is said to be vigorous and productive, and altogether the Pear seems to be a real acquisition.

It appears from a recent issue of the *Southern Lumberman*, published in Nashville, that the soft, spongy wood of the knees, peculiar growths upon the roots of the Southern Cypress (*Taxodium distichum*), is sometimes manufactured into razor-strops, which are pronounced more effective than the leather-covered, stiff strops in general use. It is necessary, however, to keep them protected from dust, which adheres readily to the soft wood, and soon becomes embedded in the grain, ruining it for this purpose.

At the late Chrysanthemum show in Philadelphia, Mr. W. K. Harris exhibited a plant upon which twenty distinct varieties had been grafted and all were in bloom at the same time. This suggests a new line of work, inasmuch as such plants would be objects of great popular interest at exhibitions, if a proper selection and arrangement of colors were made. It may be questioned, however, whether a plant bearing several different kinds of flowers possesses any value except as a curiosity. Whether some varieties of feeble growth would be improved if grafted on a more robust stock can be ascertained by experiment.

A memorial to Alexander Humboldt was recently erected in the so-called Humboldt field, one of the new parks of Berlin. As a statue of the great naturalist already stood in the centre of the town, the new monument was given a very different form. From all parts of the Province of Brandenburg the largest possible erratic stones (glacial boulders) were brought together and arranged in imitation of a terminal moraine. In their vicinity curious stones of many other sorts are grouped, and one bears a simple inscription telling that the "monument" was erected in Humboldt's honor by the city of Berlin. Our correspondent, Dr. Bolle, has long been actively engaged in forwarding this movement.

Mr. C. S. Burt, President of the Bourbon Lumber Company, of Baton Rouge, La., lately informed a correspondent of the *St. Louis Lumberman* that his company are at present dragging, from a swamp to one of their mills, a number of cypress logs felled by General Jackson's army in 1812, and used at the time for closing the Manchac River. Mr. Burt says the bark and sap have rotted off from the logs, but that the heart wood is as good as ever, and the finest quality of lumber is obtained from these logs. The *St. Louis Lumberman* has on exhibition in its office a cypress picket top from Baton Rouge, La., which was exposed to the weather sixty-three years, without showing marked signs of decay.

It has sometimes been stated that the worst monstrosities in the way of formal planting which disfigure some of our western parks—figures of men and animals and even portraits of various celebrities—should be charged to the bad taste not of native American, but of German, gardeners. The statement seems to find some support in the fact that at a horticultural exhibition held not long ago in one of the smaller German towns, a portrait of the Emperor William I., four feet and a half high, was displayed in bright-leaved plants; and in the further fact that none of the parks of our eastern towns, except in Pittsburgh, where German influence is less strongly felt than at the West, are deformed by similar horrors.

The importance attached to landscape gardening enterprises abroad is shown by the fact that when it was proposed last year to alter and enlarge the public park at Lisbon an international competition was opened for the purpose of secur-

ing the best possible plan. Large prizes were offered for the three most satisfactory plans, which were to become the property of the municipality. After the jury had made its preliminary selection, twenty-six plans remained in its hands, among which the final choice was made. The first prize was awarded to M. Henri Lusseau, the second to M. Henri Duchêne, and the third to M. Eugène Deny, all being French artists. Two French and one German artist received honorable mention. Moreover, a pamphlet, carefully prepared by a distinguished French expert, was published, in which the nature of the problem and the character of the designs submitted were fully explained by the aid of numerous drawings.

Prince Schwarzenberg, who recently died in Vienna at the age of eighty-nine, was the most conspicuous and influential of the many Austrian noblemen who have concerned themselves with horticulture. He was chiefly instrumental in the establishment of the Imperial Horticultural Society, and its first exhibition—the first flower-show ever opened in Austria—was held in his green-house in the year 1827. Elected the first President of the young society, he held the position until his death, a period of sixty years; and during all this time devoted himself with the greatest energy and amiability to furthering its interests and exciting a love of the gardener's art in his fellow-countrymen at large. His beautiful grounds were freely opened to the public, and special exhibitions were often held in them. The last exhibition he arranged, during the summer of this year, was to display his beautiful collection of Gloxinias, a flower which, according to the testimony of German journals, is not yet as well known in that country as with us.

A recent number of *Gartenflora* reproduces from Professor Schuebler's work on Norwegian trees—"Viridarium Norvegicum, Norges Vaextrige"—an illustration of a curious "Recumbent Birch-tree," which stands, if the word is appropriate, on a mountain side about three miles from Christiania. The trunk is something over six metres in length and thirteen centimetres in diameter a foot above the roots. Upon leaving the ground it bends towards the left, running horizontally for a short distance; then it makes an abrupt reverse turn and runs towards the right close to the surface and partly reclining upon it. Near the elbow thus formed a branch rises erect in the shape of a normally-formed tree, with a tall, slender trunk. Five similar branches succeed this at regular intervals in similar tree-like development, the last forming the turned-up termination of the recumbent trunk. As there is no trace whatever of minor branches, the effect of these six separate trees springing, seemingly, from a dead log, is extremely curious. The first in order is about fifteen feet in height and the others graduate down by regular degrees. The trunk must have been prostrated in very early life, and the branches assumed their singular shape—at once normal and abnormal—through the natural action of what the German paper calls "negative geotropism."

The success and usefulness of the Botanical Garden in Adelaide, Australia, are made very plain in the recently published report of the Director, Dr. Schomburgk. The garden was founded in 1855, and at first included only forty acres, originally an open forest of huge Eucalyptus trees, covered in the rainy season with a thick undergrowth. Fifteen acres were laid out as a little park, with lakes and brooks and a little hall for horticultural exhibitions. Now this park has been enlarged by the addition of forty-eight acres, and the whole garden includes 140 acres. A large palm-house has recently been built; water is abundantly supplied from the town reservoirs; a Museum of Economic Botany has been constructed, and a botanical garden planted. The cost of maintenance is less than £5,000 a year, while the utility of the establishment can hardly be overrated. It supplies a charming place of popular resort in a climate where such a place is especially required; and it has largely served the practical interest of the province by experiments in cultivation and by the distribution of plants and seeds. Vines have been imported from France, and their usefulness in Australia tested; Sorghum has been introduced; Guinea grass (*Panicum giganteum*) has been proved well adapted to local culture, and Ramie or China Grass (*Boehmeria nivea*) has been proved unsuitable. During the special Jubilee Exhibition held last year 12,973 different species of plants were shown; among those in the green-houses were 180 species of Palms, 396 Orchids and 465 Ferns. The highest temperature recorded in the garden during 1877 was 111.2 degrees Fahrenheit in the shade; and the amount of rainfall was 25.7 inches, a remarkable quantity, for in the previous year only 14.4 inches had been measured.

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Natural Beauty and the Landscape Gardener.

IN the *Century Magazine* for October was an interesting article called "An English Deer Park," by Mr. Richard Jeffries, a well-known writer on the beauties of nature, who died, we believe, before his words were in print. Chief among the attractions of the fine park to which he refers—without giving us its name or indicating its locality—is its naturalness of aspect. "Happily," he says, "the place escaped notice in that artificial era when half the parks and woods were spoiled to make the engraver's ideal landscape of straight vistas, broad in the foreground and narrowing up to nothing. Wide, straight roads—you can call them nothing else—were cut through the finest woods, so that upon looking from a certain window or standing at a certain spot in the grounds you might see a church-tower at the end of the cutting. . . . Many common highway roads are really delightful, winding through trees and hedge-rows, with glimpses of hills and distant villages. But these planned, straight vistas . . . at once destroy the pleasant illusion of primeval forest. . . . Happily, this park escaped, and it is beautiful. Our English landscape wants no gardening; it *cannot* be gardened. The least interference kills it. The beauty of English woodland and country is in its detail. There is nothing empty and unclothed. . . . Nature is a miniature painter, and handles a delicate brush, the tip of which touches the tiniest spot and leaves something living. The park has indeed its larger lines, its broad, open sweep and gradual slope, to which the eye accustomed to small inclosures requires time to adjust itself. These left to themselves are beautiful; they are the surface of the earth, which is always true to itself, and needs no banks nor artificial hollows. The earth is right and the tree is right; trim either and all is wrong."

These words have doubtless been read by many of our readers; and as they are prettily written and savor of that "love of nature" which most people are apt to think

means the same thing as a love of the beautiful in nature, they have perhaps deceived many into agreement with the ideas they voice. We are glad, therefore, to be able to quote from another English writer (in the pages of *The Garden*) an excellent statement of what we conceive to be a better point of view in such matters. Criticising the paragraph we have cited, this writer says:

"Our best natural landscapes certainly want but little gardening, but it *is* possible to garden them. The least *interference* with Nature always kills it, as Jeffries wrote; but, then, a little assistance—a little enrichment—is sometimes better than the 'masterly inactivity' which he seems to recommend as everything. Man likes to adjust himself to Nature, and often must do so, while the true gardener can help Nature wield her paint-brush, and he will also touch the tiny spots and leave 'something living' and beautiful wherever he goes. The great landscape gardener merely helps Nature to do her work quickly and easily, and that he can do so is past all doubt. Throwing up unnecessary terraces and scooping out unnecessary ditches over which unnecessary bridges are thrown is not gardening. If Nature puts a brook or a river, then the bridge is a real human want, and may be supplied with good effect: rarely or never can it be done otherwise. It is not in doing things that the landscape gardener's art is most fully illustrated. Some of his greatest triumphs have been achieved in knowing exactly what to leave alone."

But even these words would not leave upon a reader's mind exactly the impression which we conceive to be the right one. The right impression with regard to landscape-gardening we conceive to be this. There are very many beautiful spots on earth, but very few of them are beautiful in a way that fits them, untouched by art, for association with the homes of men. A primeval forest would be a priceless possession on some distant part of an estate; but to permit it to come up close to a splendid dwelling would be an offense against appropriateness and harmony, and therefore against beauty. A forest is not a park, and to make a park art is needed. Whether it is made by a process of addition or by a process of subtraction matters nothing. It needs as much art to disengage a beautiful landscape from encumbering details as to create one from the beginning. If certain English landscapes are so beautiful, and at the same time so appropriate for dwelling-places, that it seems sacrilege to touch them, it is because man has been at work over the whole surface of England for many centuries. Primeval effects nowhere exist where the country wears its typically English look. In our own land we seldom find English landscape effects near where we wish to build our homes. The reason is obvious, and so likewise is the necessity why we should be more careful than the English to call in the aid of art.

Moreover, while in the majority of cases those natural effects which Mr. Jeffries loved are the best ones to desire, there are certain cases when the straight roads he condemns are very beautiful, and when formal features of other kinds may well accompany them. Everything depends on appropriateness and harmony. What is good in one case is bad in another; and no computation of the average number of cases when a thing is good or is bad can help to determine its excellence when a given problem is in view. And finally, it will be confessed that in certain places where men must live Nature is not beautiful. Then the artist may well interfere with her intentions and create a loveliness of his own. Then he may make brooks and rivers if he can induce her to help him, and alter the surface of the ground, and decide what trees shall grow upon it and where. In short, it is only a question of degree. Everywhere and always the artist is needed. He has first to decide whether much or little should be done, and then to decide in what manner it should be done. If he does not understand the art of gardening he will create ugliness, not beauty; but this is not to say that the art itself should be condemned.

THE list of the writings of the late Professor Asa Gray, chronologically arranged by his associates, Professor Goodale and Mr. Sereno Watson, have been reprinted, in pamphlet form, from the *American Journal of Science*, in which they formed the appendix to the thirty-sixth volume. The long list, which occupies forty-one pages of the *Journal*, is conveniently divided into three series—the first being devoted to “Scientific Works and Articles;” the second to “Botanical Notices and Book Reviews;” and the third to “Biographical Sketches, Obituaries, Necrological Notices,” etc. Asa Gray was born in 1810, and his first contribution to science was published in 1834, and, curiously enough, was devoted to mineralogy, a subject in which he was early interested, but soon abandoned entirely. His publications, thus early begun, were continued almost up to the hour when he was struck down with the illness which ended that long and brilliant career, which is the pride and glory of every educated American.

In a period of fifty-three years, in 1839 only is there no entry of a publication from his pen. The book notices and reviews were begun in 1841 in the *American Journal of Science*, with an account of a “Report on the Tea Plant in Upper Assam,” and were continued, uninterruptedly, with the exception of the year 1851, until the winter of 1887. Taken as a whole, they furnish the best account of the history and development of the science of botany and of botanical literature during this period which has ever been written, just as the biographical sketches and necrological notices, begun in 1842 in the *American Journal of Science*, give the best account of the principal figures which passed from the botanical stage during a period of great botanical activity, in which Charles Darwin was changing the whole current of scientific thought.

The number of Professor Gray's publications, as displayed in this list, and the immense and varied field which they cover, must appear stupendous, even to those persons who were best fitted by opportunity to judge of his vast knowledge, his wonderful mental activity and surprising industry; and the astonishment will be all the greater when it is remembered that his work was of the very highest class, and that it was coupled with constant and engrossing professorial and administrative duties.

The value of the chronological list is greatly increased by the addition of a very complete index, occupying no less than twenty-five pages, of two columns each, prepared by Mr. A. B. Seymour. The list, thus supplemented, will be found invaluable by all working botanists, especially those interested in American plants, but, unfortunately, the papers to which it serves as a guide are widely scattered in publications which are practically inaccessible to the ordinary student. The time, however, is not, it is to be hoped, very far distant, when Professor Gray's scattered papers, and especially the bibliographical ones, if they cannot all be republished, will be gathered together and reproduced for the benefit of botanists.

No more useful, appropriate or enduring monument, with the single exception of a permanent endowment for the support and increase of his vast herbarium—the great controlling interest of his life—can be erected to the memory of Asa Gray.

A Park Commission of twenty-one members has been formed at Rochester, New York. Among them we note the names of the Roman Catholic Bishop of the Diocese, Doctor McQuaid, Mr. William Barry, of the Mount Hope nurseries, and Mr. William Kimball, who has one of the finest collections of Orchids in the world. The number of commissioners is excessive, but the board has already taken two steps from which we should infer that its work would be unusually well done. First, it has elected as its President an eminent physician and sanitarian, Dr. Edward M. Moore, the President of the State Board of Health of New York; second, before acquiring any land it has separately taken the professional advice of eight men of

experience in the management of public parks—Mr. H. W. S. Cleveland, of Minneapolis; Mr. Calvert Vaux and Mr. Samuel Parsons, Jr., of New York; Mr. F. L. Olmsted and Mr. J. C. Olmsted, of Brookline; Mr. William McMillan, of Buffalo, and Mr. W. S. Edgerton, of Albany. It has occasioned some surprise that each of these gentlemen, after making the circuit of the city, should, without conference, have fixed upon the same three localities as most desirable to be secured for park purposes. One of these is a body of high ground commanding a superb distant prospect, a part of the site being a tract of land of fifty acres which Messrs. Ellwanger & Barry, the well-known nurserymen, have presented to the city; another, a piece of the celebrated Genesee meadows above the city; the third, a portion of the great wooded gorge of the Genesee below the city.

A French pomologist, Monsieur H. Beer, has established at Louveciennes, not far from Paris, an experimental fruit-garden, in which 4,000 Apple and Pear trees have already been planted, among which are many American varieties scarcely known yet by name even in France, but which are now to be tried upon a sufficient scale to test satisfactorily their merits. With these Monsieur Beer has imported from this country plants of some of the earliest and best known varieties of French origin with the view of determining whether these varieties have undergone any change in the character of their fruit during the period they have been subjected to the American climate and to the American methods of cultivation. The result of this experiment will be watched with much interest by pomologists here and abroad.

Newport.—II.

THERE is as much variety among the fences at Newport as among the houses, and the fact is very conspicuous, as properties are so small that one form of barrier is perpetually giving place to another. It can hardly be said that a fence which seems exactly right often appears; sometimes it is too pretentious, more often, perhaps, not dignified enough. In at least one case we find a massive stone wall, some eight feet in height, which would be admirable for the protection of a large park, but seems out of place encircling a few acres in a thickly built settlement, and sins against that neighborly freedom of prospect which is beauty's sole salvation in such a settlement, and is generally preserved at Newport. And in many cases we see, on the other hand, a cheap wooden paling, without dignity or beauty, surrounding expensively kept grounds and a house of the most costly kind. But here and there we find admirable devices. For one of the best we must look again to Mr. Goelet's place, which has a very low, but broad, stone wall, built of rather thin slabs of slate in a way which hits just the right medium between over-precision and carelessness. A rustic fence recently put up on Bellevue Avenue is very well designed and pretty, but perhaps a little too rural in effect for just this situation. Low brick walls are sometimes used, but I saw hardly any which had the beauty possible to this material. Hedges, and especially those of Privet, grow luxuriantly at Newport, and are often employed. Without exception they are well tended, but sometimes they have been allowed to grow so thin that the eye can penetrate them everywhere. No matter how neat a hedge may be, it is certainly a failure when this is the case.

With entrance-gates the case is the same; sometimes they are too mean in effect, sometimes self-assertive and showy beyond all reason. Perhaps the most satisfactory is the fine, tall gate, with wide, lateral wings, of wrought iron, which admits to Mr. Van Alen's new house. It is of Spanish workmanship, and, from the design, seems to date from the middle of the last century; but fashions so often persisted in iron-work after they had died out in architecture, that it is hard to feel sure of its exact time. The pattern is at once strong and very light, and the gate is just what it should be to stand at Newport—very elegant, yet comparatively simple, and not at all suggestive of mere display or of excessive powers of protection. It is to be hoped that it may inspire others to employ this beautiful material. Iron-work as good as this in design, and better in execution, can easily be obtained to-day in America. Better in execution, I say, for last-century iron-work is a combination of welded and riveted pieces, while our best, like that of still earlier centuries abroad, is welded

throughout, and therefore more durable. Nothing better for a Newport wall could be imagined than a low plinth of brick or stone, surmounted by a light iron trellis. The idea struck certain owners some years ago; but that was the age of cast, not wrought, iron; and the results are by no means what they would be if well executed according to our present lights.

The oftener one visits Newport, the more one is impressed with the beauty of the Casino, built, like Mr. Goelet's and Colonel Edgar's houses, by Messrs. McKim, Mead & White. Here, indeed, is something we may be willing to show a foreigner as a measure of our good taste and of our success in artistic independence. In its erection a wholly new problem was triumphantly mastered. It has no prototype in this country or in any other, yet it is so perfect that we can hardly believe it was not the final outcome of a long series of tentative efforts—so appropriate to place and purpose, so consistent from end to end yet so varied between part and part, so thoroughly artistic, so delightfully pretty. If there is anything it needs, it is the more careful planting out of the fences in the second court. These might easily be made to disappear behind vines and shrubberies, and the charming effect of seclusion which reigns in the first court be thus reproduced, in a different way but with the same completeness. Otherwise the planting is excellent. There are trees and shrubs enough, yet not too many, and no formal beds except in just the right spots. The wide lawn in the first court is free from their intrusion, but on either hand, as one enters the gateway, filling the angle between the front building and the wings, is a large, gracefully designed, and pleasingly-colored bed. Thus closely connected with architectural forms, and in a place palpably artificial (in the best sense of the word) from end to end, no features could be more appropriate; and they give just the needed amount of bright color to the softly verdurous general effect.

The most interesting work now in progress at Newport is the laying-out, under Mr. Olmsted's direction, of Mr. Frederick Vanderbilt's place, which occupies a point on the cliff at the turn of Bellevue Avenue. The Cliff Walk, just after bending from a southerly to a westerly direction, here swerved a considerable distance inward to skirt a rocky ravine with steep sides, which breaks the line of the cliff. To regain the space it occupied, and carry it to a more agreeable distance from the house, a bridge has been built over the ravine quite at the edge of the cliff. Lying, I should guess, about thirty feet above the water, which breaks in beneath it over a rock-strewn bed, this bridge is of the simplest possible construction, with small irregular voussoirs in a single round curve. But for this very reason it is both appropriate to its place and admirably picturesque; and the way in which passers will be relieved against the sea and sky, when seen from the house, will make their passing an advantage to the scene rather than an annoyance. I am told that the owners are considering whether it will not be well to adopt a scheme for treating their grounds which will be an entire novelty in this part of Newport. This scheme would confine the lawns and garden shrubberies to the entrance side of the house, and treat the entire seaward slope in the most natural possible way. This portion is largely composed of visible rocks in varied shapes of the most interesting and picturesque character, and it certainly seems as though to plant it with low native shrubs and creepers and wild flowers, simulating, as far as possible, a spot which has not been planted at all, would be the best device. If the house stood farther from its neighbors—on a portion of the shore where conventional, gardenesque treatment has not yet intruded—there could be no possible question about the matter. But it has been objected that just here, with conventional methods of treatment on either hand, harmony will be injured by any deviation from such methods. The place has, however, a comparatively wide reach of water front, and, lying on a point, is isolated from its neighbors to an unusual degree; the ravine, the bridge, and the beautiful rugged rocks seem to demand a picturesquely natural arrangement of its surface; and I think it is certainly to be desired, if one loves either the best kind of beauty or the truest kind of appropriateness, that the new idea may be carried out. But only if there is to be no attempt at compromise. The scheme should be natural throughout or gardenesque throughout. A striking witness to the futility of trying to combine the two results is already shown on that portion of Ochre Point where, on the seaward side of the Cliff Walk, the space is broadest and the rocks are most conspicuous; and it would be a thousand pities were this, perhaps the most beautiful spot on the whole Cliff Walk, to be mutilated in a similar way.

Mr. Olmsted's hand shows again in the drives which, within the past two or three years, have opened up the interior of the

southern portion of the island beyond the districts thus far built upon and behind the Ocean Drive. Here the ground is hilly with bold and beautiful high rocks, offering building sites of a very desirable kind—with no sea fronts, it is true, but with the most superb distant views of land and water. The new roads are admirably disposed for convenience and beauty; but it is a matter of regret that the spaces, usually of triangular form, which are formed here and there by their inter-sections, should have been carefully turfed and planted in a conventional way with young trees and shrubs. Rough grass and Huckleberry bushes and Sumach would have been more in keeping with the character of the landscape as a whole. It is to be hoped that those who may hereafter build in this neighborhood will carefully and artistically preserve its character, and not strive to subdue its rugged and individual charm to that neat prettiness which prevails in the level districts nearer town.

M. G. Van Rensselaer.

New York.

Chinese Horticulture in New York.

AN experiment in Chinese vegetable gardening near New York has established results of some consequence in the course of four years. This industry is conducted with increasing extent on Long Island, chiefly at Woodhaven and at Astoria, with the section including Ravenswood and Steinway, at short distances beyond. The product from these novel gardens, which are known as the *Far yuen*, is already a considerable item as a market supply. It fairly provides for a class of consumers who prize their native vegetables as people accustomed to a largely vegetable diet and who may obtain in New York no less than twenty Chinese varieties of vegetables fresh from western soil.

The *Foo qua* is one of the most abundant of these products seen in market. This is the *Momordica Charantia* or Balsam Pear, sometimes identified erroneously with Egg Plant, and being in other cases confused with the Cucumber, the *Wong qua* of the extended list of edible plants familiar in China. Like the Balsam Apple of the East Indian species of the *Momordica*, this is a curious trailing plant, with ornamental foliage and peculiar fruit. Its intertwining, matted vine, covering the ground on which it grows, is dotted with small yellow flowers, unfolding continuously until late in autumn. Its fruit, which is sold by weight, resembles the Cucumber in size and general contour. The surface is marked thickly with rounded, oblong formations of varied sizes, raised somewhat like embossed patterns in decorative work. The seeds, in the form of little discs, are figured on each flattened side, as with engraved designs. These are perfectly ripened in Long Island Chinese gardens, where they are dried for use in wide, shallow forms of baskets. The sliced fruit, dried in a similar manner, is a medicinal provision. The *Foo qua* is a specially valued product as used in gastronomical combinations of varied nature. Whether fried with chicken, to form an epicurean dish, or chopped and mingled with pork or cooked in some extraordinary manner with codfish, it is equally the delight of Mongolian consumers.

The *Sing qua* is another of the ornamental Gourds with remarkable fruit not unfamiliar to botanists. This is included in the genus *Luffa*, of which ten species have been described. It was formerly classed with the *Cucumis*, from being found allied with it in some of its characteristics. The *Luffa acutangula* is the Chinese variety introduced; the fruit is produced in abundance for the market. In its general shape this is somewhat like the long-necked Gourd, but with ten sharp exterior ridges distinctively marking it in the direction of its length. Its luxuriantly growing vines are trained over poles and trellises, forming lengthy masses of foliage. The yellow flowers continue to appear in the autumn season with the well-developed fruit, which is fully ripened in tropical latitudes only. This product, which is of a sweet taste, is largely used for soup in Chinese cookery, and, in other cases, is prepared like Squash. When very young it may be eaten uncooked, like Cucumbers. As with other varieties of its species, the inner portion of the fruit is spongy, and, when old, forms what may be used as a sponge. The one variety indigenous to this continent is largely represented in such form in the shops. The network formation of the inner substance of the fruit when ripe, is sometimes eighteen inches in length and three inches in diameter. From recent experiments this fruit, known popularly as the Sponge Cucumber, and variously as the Cloth Gourd, the Towel Gourd, the Bonnet Gourd and the Egyptian Bath Sponge, has been brought nearly to maturity near New York from seeds planted in the open ground. The product in the variety reaching Chinese gastronomists in New York amounts to several hundred pounds a year.

A vegetable in great demand is the Mustard Green (*Quon qua*), which is obtained in large additions in pickled form among Chinese importations. This is greatly prized for its flavoring quality in the composition of varied soups and stews. A kind of green, growing like a Lily, in the water, is the *Own choy*, with a triangular form of leaf and a hollow stalk like the Bamboo. A variety known as *Yen choy*, meaning lamb's quarter, is cultivated, and the *Bie choy*, the white-green, with green top and white stalk, is another of this series. The *Tong choy* and the *Long na boe*, or snowflake green, are additional varieties on trial.

The *Ho lan doe*, or Sugar Pea, is satisfactorily developed for the market, and the String Bean, the *Doe goe* of the Chinese, attains a length of two feet under favorable conditions, or about half that of its native growth. The white Turnip, while sweet and tender, is of smaller size than in China or in California. This is of lengthened form, with a weight of possibly fifteen pounds as an indigenous production.

The Chinese Spinach (*Boe choy*) grows much larger here than our common garden species. In full growth its clear white stem is about the ordinary size of the Celery-stalk. It is tender and succulent, growing in the rich soil of its new location. The *Fon qua*, or Pumpkin, of this introduction, is of lengthened form, resembling a club. The *Foo low goe* may be easily identified from familiarity with any other varieties of the Gourd. A more peculiar variety of its species is found in the *Boe qua*, or crescent-shaped white Cucumber. Two kinds of Citrons are produced in diminutive size compared with the growth of the species in China or in Cuba, where the largest specimens of the fruit may weigh fifty pounds or upward. On Long Island the average weight is about two pounds. One variety, with furry exterior like the caterpillar, is known as the *Don qua*. This is largely used in soup, while the *Zit qua* is preserved in the form of sweetmeats. The Lettuce is produced in some quantity as *Shang choy*; Celery as *Hon kon*, and *Yuen si* is Parsley of a high flavor, and corresponding value.

All vegetables are sold in the Mott Street market-places by weight. The exhibition of these is made in baskets, and with single specimens hung by strings outside the doors of Chinese groceries. The production is managed with great care and diligence, the methods being those of China, with only such natural modifications as may be indicated in connection with a fresher soil and with implements of improved varieties in some part adopted.

New York,

E. T. Lander.

New or Little Known Plants.

Acidanthera bicolor.

THIS plant, which is figured upon page 486 of this issue, belongs to the Iris family, and although the flowers are not as brilliant in color as those of some of the species and varieties of the nearly allied *Gladiolus*, it is an interesting and valuable addition to the list of bulbs which serve to make the flower-garden attractive during the summer. The bulb is small, not exceeding an inch in diameter, with *Gladiolus*-like foliage and a lax flower-spike two or three feet in height. The flowers, which are deliciously fragrant, especially in the evening, are long tubed and somewhat pendulous, with a creamy white perianth, marked with broad, chocolate-brown blotches. This plant requires the treatment given to the tender species of *Gladiolus*, except it is found to prefer a somewhat stiffer soil. It can be propagated by seed or by the small bulblets which it produces in great numbers.

The illustration upon page 487 represents a number of these plants grown together in a tub, which bloomed during the month of October in a garden near Boston. It serves to show the value of this plant, and several others of the same class, for the decoration of conservatories or living rooms, after the frost has destroyed the beauty of out-door gardens.

The flowering time of nearly all these plants can be retarded by starting them late, and, in this way, they can be got to flower, with the protection of a frame or cold pit, considerably later than their usual period, and at a season when flowers are not abundant.

The genus *Acidanthera* was established by Hochstetter, and the plants which are included in it are distinguished

by their pointed anthers, as the name implies. Ten or twelve species, natives of central or southern Africa, are now referred to this genus. *A. bicolor** was first collected by Shimper in Abyssinia and was described as long ago as 1844, although it has never been very well known in gardens, and no figure has been published of it, with the exception of the early and not very accessible one quoted below.

W. E. Endicott.

Dorchester, Mass.

Foreign Correspondence.

London Letter.

ALTHOUGH the past season has been considered unfavorable to Chrysanthemums, yet the quality of the flowers has, so far, been very satisfactory. The Japanese kinds were exceptionally good at the exhibition of the National Chrysanthemum Society, held this week in the Aquarium at Westminster; indeed, all the cut blooms were considered fine. But we have too many names for these plants, and the proposal that has been made to reform this matter by holding a special exhibition for the purpose next November, comes none too soon. Next year will be the centenary of the introduction of large-flowered Chrysanthemums into Europe, and it is proposed to celebrate it by an exhibition of an exceptional kind. This would afford a good opportunity for dealing with the name difficulty. Roughly, we have about a thousand names for Chrysanthemums, and new ones are added by the dozen annually. You in America are held responsible for a good deal of double naming, more especially among the Japanese kinds, for you import new kinds direct from Japan. These you give your own names to. We get them, too, from Japan, and name them, and afterwards find that some of ours are identical with yours. However, a few new ones have lately been raised in England that are good and well marked. Such is *Stanstead Surprise*, with very large flowers, the petals of good substance, curled and colored rich crimson, fading to pink, the under-side being silvery; *Alpha*, *Album Fimbriatum*, *William Holmes* and *Mrs. J. Wright* are others. But the flower of this year is *Edwin Molyneux*, of which some gigantic blooms were shown at the Aquarium, and were greatly admired by the crowds. Probably the desire for big flowers is a little absurd. They are certainly lacking in beauty when seen on the plants, and on the exhibition table they are misleading. After all, the right place for a flower is on the plant which bore it, and the best Chrysanthemum is that which makes the prettiest picture as a whole.

The most striking of the newer Orchids flowering now is *Cattleya Bouringiana*. This plant is certain to become as popular for winter flowering as its near ally, *C. Skinneri*, is for spring. These two species resemble each other very closely; in fact, much more so than many others which are recognized only as varieties. Still they are distinct enough in their seasons of flowering, and *C. Bouringiana* has the advantage in that it blooms when Orchid flowers are scarce. It requires the same treatment as *C. Skinneri*, and is one of the freest of all *Cattleyas* in respect of growth and flowers. The latter are rose-purple; the lip, which is funnel-shaped, being maroon-purple with a white blotch in the throat. *Cypripedium Elliottianum* is the latest of Mr. Sanders' grand list of new introductions. This enterprising nurseryman has done more to enrich Orchid collections than any other importer of recent years. Within a very short time he has introduced *C. Sanderianum*, *C. Rothschildianum* and *C. Elliottianum*, a magnificent trio, certainly. The last is named in compliment to Mr. Elliott, of your city. It has the habit of *C. Stonei*, and very large handsome flowers on scapes about a foot high. The dorsal sepal is one and one-half inches wide and two

* *Acidanthera bicolor*, Hochst. in *Regensb. Flora*, 1844, 25—Bouche & Wittm. in *Berlin. Monat.*, xix., 12 t., 1. Baker in *Jour. Linn. Soc.*, xvi., 160.
Ixia Qartiniiana, A. Rich. *Fl. Abyss.*, ii., 310.
Sphaerospora gigantea, Klatt in *Linnaea*, xxxiv., 699.

and one-fourth inches long, white, lined with crimson; the petals are white, blotched and lined with crimson, narrowed towards the apex and about six inches long; the pouch is like that of *C. Stonei*, ivory white, veined and tinted with rose. A thousand plants of this new introduction will be sold by auction on the 16th inst. *Phajus callosus* is a recent addition to the Kew collection, and is now in flower. It has the habit of *P. grandifolius*, but the flowers have yellowish-brown sepals and petals, and a funnel-shaped white labellum, which changes to cream-yellow with age. This species, together with *P. Wallichii*, *P. bicolor* and *P. grandifolius*, should be in every collection of tropical Orchids, as they grow and flower very freely under ordinary treatment. Such kinds as *P. tuberosus* are too expensive to procure, too difficult to grow, and too prone to die suddenly for most Orchid growers, albeit they are exceedingly beautiful when in flower. We have a *Cypripedium mania* in England—indeed, one might safely say in Europe—and there are evidences of its having spread to America, for a single plant of *C. Marshallianum* was lately purchased at an auction here for an American collection, the price paid being 150 guineas. In my opinion this plant has little to recommend it save its hybrid origin, and its being a little less beautiful than one of its parents, *C. concolor*, and a little more attractive than the other parent, *C. venustum*. Hybrids which are ugly to look upon, which none save those affected with the mania would waste a second glance upon, realize ridiculously high prices. The consequence is that every grower of *Cypripediums* has begun to cross them, and hopes for something new. In a few years we shall have as many named *Cypripediums* as we now have of *Chrysanthemums*, for it appears that every hybrid is dubbed with a new name.

In an article on the culture of *Phalænopsis* which lately appeared in GARDEN AND FOREST, it was stated that *P. Lowii* was apt to lose its leaves in winter, and that it required a light position. This pretty species is grown very well at Kew, last year producing branching spikes nearly three feet long, with over thirty flowers on each. The treatment there for it is as follows: House, a hot, moist, rather shaded one, with the plant suspended near the glass. It is fastened on a teak raft with a good layer of living sphagnum about the roots. During summer it is watered daily; in winter the moss is kept green. The leaves remain on the plant all the year round, and strong spikes of bloom are produced annually.

Mr. Cannell, of Swanley, has introduced and raised many very useful flowering plants, but it is questionable if he has ever made such a lucky-hit as with his new *Begonia Octavie*, of which he had a magnificent group at the Aquarium show. The flowers are exactly like good blooms of *Gardenia Fortunei*, quite as white, as full, and of as good substance. The plants are scarcely a foot high, freely branched, and the racemes are erect and many flowered. It is only by examining the leaves that one is assured of the correctness of the name *Begonia* for this plant. Flowering in November, it becomes doubly valuable.

These new *Begonias*, which the Messrs. Veitch have obtained by crossing the distinct winter-flowering *B. Socotrana* with some of the tuberous-rooted kinds, are unlike other *Begonias* in several important particulars. The most valuable is that of holding their flowers for several weeks, which if cut and placed in water will last at least three weeks. I have proved this with flowers of *B. Socotrana*, as well as of its progeny. The best of the latter is John Heal, which has rosy-crimson flowers. Winter Gem is another good variety, and I hear there are several new ones of the same race which are described as considerable improvements on those named.

Ipomæa Horsfalliæ, *I. ternata* and *I. Briggsii* are three first-class, stove, winter-flowering climbers. The first is an old favorite, its large axillary bunches of brilliant rose-crimson flowers being admirable in every way. The second is sometimes known as *I. Thomsoniana* or "the

white *Horsfalliæ*," and was introduced a year or two ago. It resembles the first named in habit, but the leaves are thicker in texture, and have three instead of five divisions; the flowers are large and pure white. *I. Briggsii* is a variety of *I. Horsfalliæ*, and is characterized by its smaller flowers, which are deep rose-colored. These three species are now bearing hundreds of flowers in the stoves at Kew.

Cacti are not popular in English gardens. *Opuntia Rafinesquii* is grown by a few, but most of these plants are practically unknown here. Probably you have in America other kinds than the *Opuntia* mentioned, which would be hardy in England. Information on these would be specially interesting to English readers of GARDEN AND FOREST.

November 9th.

W. Watson.

Cultural Department.

Summer Apples in New England.

THE planting of Apple trees must have been begun in the very earliest years of the settlements at Plymouth and Boston, if we are to believe the statements, taken from old records, of the large quantity of cider made before these settlements were ten years old. Doubtless most of these trees, if not all, were grown from seeds brought from their old homes by the settlers. Grafting was but little known or practiced, and even up to the beginning of this century, and in many parts of the country considerably later, seedling orchards, in which only here and there were trees producing fruit of edible quality, were the rule.

It was, doubtless, a good thing in the end that such a great number of seedling trees was allowed to grow and bear fruit, since among these have been found nearly every popular and profitable Apple now grown in this country. Foreign varieties have never gained any great foothold in New England, and, with the exception of Russian Apples, valued especially for their hardiness against the severe cold of northern New England winters, they are not likely to do so, because very few of them equal our own best sorts in all that makes these fruits desirable.

Up to 1840 commercial orchards, except for cider, were almost unknown, nearly every family, even in the cities, growing fruit enough on its own grounds for a home supply. It was the easy intercommunication between the residents of the larger places which first popularized and extended the cultivation of the best known sorts of fruit. In all villages were sons and daughters of farmers, who rapidly spread the knowledge of choice fruits to the homesteads from which they sprang, and, as the interest grew, small nurseries were established near the towns for the propagation of these selected Apples. In this way a lively spirit was awakened, and between 1835 and 1850 orcharding, as now understood, had a very rapid growth and development. During this time and afterwards, the springing up of the Washingtonian temperance movement led to the destruction of large numbers of the old cider-orchards, and, though some such still survive, most of the orchards in New England now mainly consist of grafted trees.

The Massachusetts Horticultural Society did a most useful work in disseminating a knowledge of good sorts of fruit, and although modern means of transportation were unknown, yet all through the settled region—in every village and hamlet—there were some persons who managed to secure, grow and extend the knowledge of the best varieties. During that time most of the Apples were selected which still constitute the standard list, both for commercial and home use.

The first summer Apple that became widely known was the Early Harvest, styled by Downing "the finest early Apple yet known." Before its advent the American Summer Pearmain was considered the best early Apple, though in Maine the English Sops of Wine, known there more generally as Bell's Early, was found to be more suited to the climate. Shortly afterwards the William's Favorite, which originated within the present limits of Boston, began to be known, and it now takes the lead as a choice market variety. Everywhere the Harvest was planted, but in very few places has it ever grown perfect fruit long. While the trees are young this Apple is often very fine, but in a few years the scabbing and cracking fungus gets a hold upon it which is rarely broken. For this reason the Harvest has never been much of a market Apple in New England. The Pearmain has almost passed out of cultivation, and is rarely seen upon the street-stands, which contain mostly the Red Astrachan. The



Fig. 75.—*Acidanthera bicolor*.—See page 484

Favorite requires high culture to bring out its merits, but so grown it takes the first place in the better class of fruit-stores, though inferior grades are freely sold on the street. The new Russian Apple, Yellow Transparent, is beginning to be seen, and, as it is so easily grown, and comes so soon to bearing, it is likely to rival the Favorite in popularity. These two Apples are about of one size and shape; the one a solid, rich red, and the other a clear, straw yellow. Among the summer sweet Apples the Sweet Bough stands first; but sweet dessert Apples are comparatively little in request, and not

common on the stands or in the shops. I give the name by which this Apple is commonly known, though Downing gives preference to Large Yellow Bough. I frequently hear it called still "Sweet Harvest," though not so often as when it was more often sold with the Early Harvest. As we go northward we find Sops of Wine and Red Astrachan—the first in Maine, and the other all through Vermont and New Hampshire, as well as Maine. In Vermont, especially in the Champlain Valley, the Summer Pippin (locally known as "Paper-skin," and elsewhere in the State as "Champlain") has great

popularity. This Apple is large, handsome and excellent in quality. In northern Vermont its season extends into September. Away from Lake Champlain it is not much cultivated, and is comparatively little known elsewhere in New England, being more especially a New York Apple. I think it nowhere grows so large and fair as on the Champlain shores and islands. Its New York synonyms are Haverstraw Pippin, Nyack Pippin, Geneva Pearmain and Walworth. In Massachusetts the Foundling occupies about the same season as the Summer Pippin, while the Duchess of Oldenburgh comes into market before August expires.

can be no doubt that some of our finest Apples, especially among the summer sorts, require high cultivation to be permanently productive and profitable. These trees produce as large fruit as later sorts, and in equal abundance. It is reasonable, therefore, that they should be well fed and cared for, and the fruit properly thinned. When these things are done the fruit is larger and fairer, and the trees maintain their vigor much longer. The profit, in all fruit-culture, comes from the largest and fairest fruit, and this is not gathered from neglected trees.

Newport, Vermont.

T. H. Hoskins.



Fig. 76.—*Acidanthera bicolor*, grown in a tub.

The Early Strawberry, Early Joe and Primate are seen as summer Apples quite frequently in New England, but mostly imported from states south and west. In Maine, two native Apples of merit—Cole's Quince and Moses Wood—may be classed as late summer, though mostly maturing and marketed after the first of September. In northern Maine, New Hampshire and Vermont the Yellow Transparent is the only Apple which ripens its entire crop before September.

The Summer Apples of Rhode Island and Connecticut include all of those in favor in the states north, with the addition of a number of sorts which would there be rated as "early fall."

In regard to what is known as the failure of varieties, there

Green-house Climbers for Cut-flowers.

Clerodendron Thompsonæ.—This handsome and showy plant, belonging to the scandent section of the Clerodendrons, is a particularly useful climber for cut-flower purposes, being most effective for basket-work or dinner-table decoration, where its bright crimson flowers, with their pure white calyxes and their naturally graceful habit of growth, produce a charming effect. It is of easy culture, but it produces better and more abundant flowers if it has a season of rest to properly ripen the wood. *C. Thompsonæ* does best when potted in light loam, to which is added a moderate quantity of dry cow or sheep manure, and an occasional watering with liquid manure

will also improve the growth. It should be grown in a warm, light house, with just shade enough to prevent the foliage from scorching, and it needs frequent syringing to keep down red spider. This treatment should be persevered in until August or September, or later if desirable, when the supply of water should be gradually decreased until the wood has ripened and the foliage dropped off. The period of rest should be from two to four months, after which it may be started into growth again, and will soon give an abundant crop of flowers. Probably the easiest method of propagation is by root-cuttings, made by cutting moderately strong roots into lengths of from one to two inches. These should be placed in pans of light soil, and the pans should be set in a cutting-frame or on a bench having some bottom-heat. Here the roots will soon start, just as some of the *Bouvardias*, *Aralias* and other plants do when similarly treated.

Stephanotis floribunda.—The handsome, dark green, glossy foliage, and pure white, fragrant flowers of this excellent plant are well known, and its free habit of growth makes it one of the most useful of white-flowered climbers. It will grow very well in an intermediate house, where the temperature ranges from fifty-five to sixty degrees, and, if space can be spared for it, it will grow more rapidly when planted out and the shoots trained on wires attached to the roof of the house, but if it is not convenient to grow it in this manner it may be put in a pot or tub and trained on a balloon trellis. The soil most suitable for it is composed of light loam and peat in about equal proportions, with a liberal allowance of sand and a little broken charcoal, and in mixing the soil it is better not to break it up very fine, as the plant does best in a rather coarse, open soil, and needs free drainage. The *Stephanotis* is readily propagated, either by cuttings or from seed, but some growers prefer cuttings, and on the ground that the plants so produced are more floriferous than seedlings. The cuttings should be made of moderately hard wood, and if given some bottom-heat they will emit roots in a few weeks.

Passiflora racemosa (*princeps*) is another beautiful climber, and when well-established it produces its bright red flowers all the year through. The long and graceful flowering sprays of this plant are specially adapted for draping around large flower-vases or for mantel-decorations; and used in this way they are very striking and effective. This plant is also of easy culture, its chief requirements being good drainage, a moderately light soil and a temperature of about sixty degrees.

Watering with liquid manure at intervals during the growing season is beneficial, and care should be taken to prevent the mealy-bug from gaining a foot-hold, as when this pest becomes established on plants of this class it is difficult to exterminate it. *Passiflora racemosa* may be increased by cuttings or by grafting, and in the latter case either one of the free-growing *Tacsonias* or one of the other *Passifloras* of rapid growth, such as *P. Raddiana* (*Kermesina*), may be used as a stock. Grafted plants usually make more rapid growth than those on their own roots, and therefore that plan for increasing them is generally adopted.

Philadelphia, Penn.

W.

Soils.

THE importance of special soils for the different genera or species of plants is often overrated, and the different formulas found in the cultural instructions of various catalogues and works on horticulture are often useless or misleading. These specific directions as to soils have frightened many persons from growing plants both in the open air and in window gardens. American writers are comparatively free from mistakes in this direction; but in nearly every foreign publication on this subject the peculiar soil in which each plant should be grown is carefully described, and too often the mixtures recommended can only be obtained at an expense that amounts to prohibition. It often happens, too, that the directions laid down with such care are ludicrously useless, for our climate at least. For instance, an English writer asserts, "To grow *Portulaca* well it should be given a soil composed of turfy loam, leaf-mould, well-rotted manure in equal parts, and a little silver sand added." For a plant that comes up so freely everywhere as to become a troublesome weed, this attention seems quite unnecessary.

The simple preparation of the soil according to rule would require a considerable amount of labor, even though the materials were at hand. Few persons would think of taking so much trouble for a choice and costly plant, much less for those that thrive in neglected places.

The fact is, that where common vegetables will grow, flowering plants will grow, and if the books say turfy loam, and you have a clayey soil, or a sandy loam, put in your seeds,

bulbs, plants or trees without fear. Hoe frequently and thoroughly, and good fruits and flowers will be the result. It is true that some soils are more productive than others, or are easier or more difficult to till; some require more manure than others; and yet any soil that will produce good Beans, Beets or Potatoes will produce flowers as well. And soil that is best for vegetables in the garden is best for plants in pots. Exhausted soil will not produce good garden crops. You can no more draw from the soil without making deposits than you can from your bank. If you overdraw in either case your drafts will be dishonored. And as the amount of soil in pots is of necessity limited, it should in all cases be made strong and rich. The best soil for this, or any other purpose, is well-rotted sod, and this can be procured anywhere. Take sods from the road-sides or meadow, pile them up in any convenient out-of-the-way place, and let them rot, and you will have all the elements that contribute to the growth of plants. The best time for this work is in early spring, when the turf is fresh and green; then the roots will die quicker than at any other time. It is by no means necessary for the roots of the grass to become thoroughly rotted; all that is required is to have them killed, as the growing plant will feed upon the old turf as fast as it is decomposed. Plants grown in this soil will be strong, healthy and floriferous. A more rapid growth will be induced if a liberal proportion, say one-fourth, of well-rotted manure is added, in which case more weeds and worms must be contended with, but all trouble will be repaid by the increase in quantity and quality of bloom. Young plants intended for summer blooming in the garden should be grown in soil without manure, if it is naturally rich and not too heavy. Plants grown in such a soil will be healthy, and when planted out in the garden, they will have strength to assimilate all the food prepared for them, and will make a far stronger and more rapid growth than if stimulated at the outset in a very rich soil. The most successful Rose-growers use nothing but rotted sod for young plants, and the almost universal satisfaction their young stock gives, is due to this fact alone. The largest plant-grower in this country, if not in the world, has but one soil for everything, but one compost heap, and that is rotted sod. No doubt good peat or leaf mould will benefit a stiff, clayey soil for many exotic plants, and certain plants indigenous to a given soil and locality will thrive better there than anywhere else; yet the soil in which any plant is found in its native state is not always necessary for its perfect development. Indeed, many plants will not succeed as well in a soil that is natural to them, when they are grown in a different country, where climatic influences are different; for instance, the Cactus, or, at least, most of the genus, is found growing in arid wastes, but, introduced into green-houses, they will not thrive in the soil brought from their native habitats. The different atmospheric surroundings make a different soil necessary. Earth and air must work in harmony together to produce the plant.

Again, it is true that all plants cannot be grown equally well in a clayey or in a sandy soil. But your soil will need no more manipulation for flowers than it does for vegetables. Work well the soil you have, give it food if exhausted, drain it thoroughly if wet, but do not be discouraged in planting bulbs, seeds or shrubs, because you have not some special soil recommended in the catalogues and trade journals.

Garden City, New York.

C. L. Allen.

Top-dressing for Trees.—Now is the time for top-dressing around evergreens and other choice trees and shrubs. First clear out dead grass and leaves from under the young Conifers, as they afford a favorite lodging-place for field mice, which are so destructive in winter in gnawing off the bark of trees. And in place of what is removed return a dressing of rotted manure under and around the trees. At Mr. G. W. Childs' place, near Philadelphia, I lately observed that a heavy dressing of manure, and sometimes of loam and manure, was being strewn under and around the trees, whose splendid vigor is ample testimony of their appreciation of this generous treatment.

Pruning Trees.—Now that the trees are leafless, we can readily see where branches cross and rub each other, where some project too far, where the trees are too thick or are lopsided, and we should prune accordingly. Avoid heavy pruning. Cut off clear all stem and root sprouts. And where it is necessary to cut off large branches, saw them off short, then smooth over the cut with a sharp knife or small plane, and paint the wound to exclude moisture and prevent rot. In some trees, Lindens particularly, we often find diseased branches; cut these quite out at once, for there is no cure for them. In other cases, branches of Yellow-wood, Willow

or Thorns are badly infested with bark-scale, and I have never found a sure, practical cure for this pest except by cutting out and burning the affected branches. This scale sometimes takes such full possession of Lilacs as to compel the sacrifice of the plants. In the case of Oaks, Beeches, Maples, and other large trees which no longer need pruning to regulate their growth, we can do little now, because the dead twigs and limbs cannot be readily distinguished among the leafless branches. Cutting these away should be attended to when the trees are in full leaf. Where it is necessary to remove trees in order to open vistas, or for other purposes, the trees should always be rooted out and not cut down; the stumps should never be left in the ground. Sometimes beautiful views across the country can be seen over the tops of a clump of trees. See to it that these trees are headed so low that they do not intercept the view in any way.

Pruning Shrubs.—In pruning shrubs we wish to preserve symmetry of form and promote vigor, and at the same time to secure a profusion of flowers. Shrubs that bloom in spring on the previous year's wood should not now be pruned, but rather after they have done blooming. These include Daphne, Forsythia, Bush Honeysuckle, Japan Quince, Red Bud, African Tamarisk, Corylopsis, Snowball and the early blooming shrubby Spiræas. But such shrubs as bloom on the current season's wood should be pruned now, and in some instances quite severely back. These include *Hydrangea paniculata*, *Lespedeza bicolor*, Althæas, Chinese Tamarix, Stuartias and the like. *Desmodium penduliflorum*, *Hydrangea radiata*, *H. arborescens* and *Callicarpa purpurea* seem to do best when cut down close to the ground every year.

Out-door Roses. Roses should not be pruned at this time of year except to cut in very long shoots. If pruning is deferred till spring, we can cut back into the living wood, where the tips have been winter-killed. Prairie Roses and other climbing varieties grow late in the fall, and these late-formed, sprawling growths should be cut away of tied up, for tidiness' sake. If *Rosa rugosa* has outgrown its bounds, dig around it deeply and remove all suckers; these make capital plants for a fresh plantation. Also save the seed hips and sow them now in boxes of sandy soil in a pit or green-house, or if you do not want them yourself, exchange them with some neighboring florist for something that you may need. Although this Rose reproduces itself freely from suckers and seed, it has never become very plentiful. Moderately tender Roses, that need a little protection in winter, can be bent down and covered with earth. But, usually, a good mulching of littersy manure over the roots, or, if the shoots are bent down, over them as well, will suffice. Evergreen branches laid over the bushes are also a good protection. Tea Roses are safer if lifted now and heeled into a frame or potted and plunged in a frame till spring. Hermosa, Mrs. Degraw and some other Bourbons get cut back to the snow line or near it every winter, but this does not seem to injure them, and, when pruned in closely, they throw up vigorous, free blooming shoots. W. F.

Glen Cove, New York.

The Forest.

Do Forests Influence Rainfall?

IF I could find the place on the earth of which it was first and emphatically said, "It never rains but it pours," I am convinced that it would be a plain largely deficient in forest-growth. For, if there be an influence upon moisture conditions of the atmosphere exerted by forest areas—and such areas must not only be of sufficient size, but also densely enough covered to exert their proper influence upon temperature and moisture within and without—it consists, I believe, in a more equal distribution of precipitation with reference to space and time.

In the end, what does it matter whether it is by increased precipitation that the forest benefits the field, or whether the same physiological effect is produced by increased relative humidity in other ways, or by raising the water level and increasing or advantageously disposing of the available water supplies through favorable ground-water conditions or surface channels?

As this question of forest influences is one which, to a great extent, underlies the demand for national interest in the forestry problem, it may be of advantage to review briefly the methods which have been employed to solve the question. Space will not here allow a critical consideration of the value of each method, which may be done at some future time.

As is natural, the first suggestion that a relation between climate and forest-areas exists, came from general observation.

History testifies that districts once surrounded by verdant groves, with fertile soil and favorable climate, have become inhospitable and desert wastes, with treeless mountain-sides, and the conclusion follows that there is some connection between the forests on one hand and fertility and genial climate on the other. This method of proving the proposition, which has been the most popular, and is still largely in vogue, may be called the historico-statistical. Among the eminent men who have used this method may be mentioned Du Monceau, Reaumur, Buffon, Humboldt, Arndt. It is not to be entirely discarded now, but its results must be adopted with caution, for not only are the reports of the facts in many cases dubious, but the inferences are not always reasonable.

About the middle of this century, with the development of physical, and especially meteorological science, a second method was applied. This method attempted, upon a theoretical basis, to discuss and reason out the assumed relation by employing the accumulated physical and meteorological data, which, scanty at first, has lately been considerably increased. Among the prominent meteorologists to employ this method first was Becquerel. The results of this method have brought us considerably forward in the determination of the direction in which an influence would be possible, or even probable; and while it has not been able to either prove or disprove satisfactorily the existence of this influence nor advanced our knowledge of its degree and quality, it has cleared the way for a more scientific consideration and investigation of the subject.

The next step and method of demonstration employed was the mathematical one, using numerical data which had either accumulated independently of the question or were specially provided for the purpose. We have here to distinguish two methods, a wholesale and a retail one, if I may so express it, or, more scientifically speaking, the one using large averages and comparing data from extensive areas, though not specially provided for this end; the other comparing data obtained for the purpose in limited localities by direct detail measurements within and without forest areas. The latter method, which I call the retail one, is the one now largely adopted by German investigators.

The first attempt to obtain, for the settlement of this question, a series of exact, methodical observations, dates back to the year 1864, when Dr. Ebermayer, Professor at the University of Munich, constructed the necessary apparatus, and with the aid of the Bavarian Government and Forest Administration established in 1866 the first three double stations, where a set of meteorological instruments were observed within a forest area, and another set simultaneously in a field. In the following year the number of the double stations was increased to six. In 1869 Switzerland followed with three stations; in 1870 Italy established a station, and in 1874 to 1877 Prussia entered upon this field of work, having now sixteen stations in connection with the forest experiment stations; and to-day quite a number of double stations are collecting data in all parts of the country.

The points of observation at the Prussian stations are chosen 200 metres (about 664.5 feet) distant from the edge of the forest within and without. An enormous amount of material has accumulated, but as yet has not been summarized or turned to account. It is difficult to see how anything else can be demonstrated by it than what is already known—namely, that the meteorological conditions within the forest are different from those prevailing without. Whether the forest conditions are communicated to the open field, and to what degree, if at all, can certainly not be proved by the data obtained. By establishing points of observation in the field at varying distances, it might have been possible to demonstrate the presence or absence of climatic interaction between forest and field.

In the wholesale methods, which use data obtained over large areas independently of the special objects of this investigation, we may again discern two ways of handling them: the one comparing the data found during various periods at the same stations and bringing them in relation with forest conditions existing at the various periods; the other comparing data obtained simultaneously from stations situated differently as regards other climatic influences. The first method has been employed by Mr. Gannet and Mr. Harrington. Mr. Gannet endeavors to establish by a combination of data that neither for Ohio, which has been largely cleared, nor for New England, which is said to have largely increased its forest area, nor for the Prairie States, which contain more timber in recent times than formerly, can a noticeable difference in rainfall be demonstrated. In fact, however, he only proves that his method leads to no certain result for lack of adequate data to work upon. Mr. Harrington's method fails to be con-

clusive for the same reason—lack of proper data. He arrives at the opposite result from that of Mr. Gannet for the same region by comparing the position of isohyetal lines constructed for two different periods about thirty years apart.

The second class of wholesale methods, which compares data simultaneously obtained from stations differently situated as regards forest conditions, has been lately employed by the eminent Russian climatologist, A. Woeikoff. He chooses an area in northern India, which is partly a treeless region and partly densely wooded, and is otherwise uniformly situated with reference to other climatic influences. He concludes from his data that, at least for sub-tropic regions, a forest cover has the effect of reducing temperature extremes and increasing precipitation.

Woeikoff further investigates whether the influence of the forest upon the climate of surrounding areas may also be proved for latitudes of thirty-eight to fifty-two degrees north—all the West European Continent—and he proceeds as follows:

Taking the temperature of July as that of the warmest month, and assuming that, on the whole, the temperature at the Atlantic coast is lower and rises toward the interior of the continent, he compares the temperature of a number of places situated near the fiftieth degree, the observations being all taken outside of the forest. To bring them upon a uniform basis for comparison, he assumes an increase of temperature of 0.5 degrees, centigrade, for each degree of latitude towards the south, and a decrease of 0.7 degrees for every hundred metres of altitude. By an easy calculation he then obtains the mean July temperatures for every station in this line, reduced to exactly fifty degrees, north latitude, and 200 metres of altitude.

The result is that in this series a rapid rise of temperature appears from the Main River, eastward, then a considerable reduction in the eastern and western Bohemian stations, where large forest areas prevail, while in the Bohemian basin the temperature is higher, as it is also in Silesia, and again much lower in the well-wooded Carpathian Mountains of Hungary. The apparent influence of these large wooded areas is still noticeable in east Galicia as far as Kiew, where the neighborhood of forest and morasses works in the same direction, while in the Steppes the highest temperature is reached.

In the same manner a series of stations lying on or near the forty-sixth degree are treated, reducing their July temperatures to the theoretical temperatures for the forty-sixth degree and 200 metres of altitude; and another series of stations is worked out for the forty-fourth degree in Croatia, Bosnia, Herzegovina, Dalmatia, and here the heavily wooded Bosnia is found from twenty-five to forty-five degrees cooler.

The results of these comparisons lead the author to conclude that in the western part of the continent large forest areas influence the temperature of neighboring localities, and interrupt the normal increase of temperature from the Atlantic Ocean into the interior of the continent to such an extent that even regions far in the interior have a cooler summer than those nearer the sea.

He concludes further, not only that there exists a climatic influence of the forest, but that it exerts itself over considerable distances according to the size, kind and position of the forest areas; that, therefore, forest-planting or deforestation offers a means of changing a climate considerably.

Another modification of this method has been employed by H. F. Blanford, and by Dr. Brandis, late Forest Inspector-General of British India, by comparing the records over a confined area (61,000 square miles and 600,000 acres, respectively) during a decade of forest destruction and a decade of forest protection under government regulations. In both cases a progressive increase of rainfall is observed in the second period, until the mean increase within ten years has been twenty per cent. and twelve and one-half per cent., respectively, for the two areas thus reforested.

The latest interesting, instructive and quite novel application of the wholesale method is that employed by Dr. F. J. Studnička, Professor of Mathematics at the University of Prague. It consists in comparing the rain records of stations differently situated as regards forest conditions, after the records have been reduced to a theoretical quantity which corresponds to the altitude of the station. To understand the significance of these observations, the reader should refer to a map of Bohemia, and note its peculiar geographical position, being a basin shut in on all sides by high mountain ranges, inclosing an area of about 20,000 square miles.

This basin has been covered with a net of over 700 rain-gauge stations, for the purpose of obtaining accurate data of the quantity and distribution of precipitation over the king-

dom. Uniform ombrometers (rain gauges) were used and very carefully placed. As at present organized, there is one station for every thirty square miles. No other country, I believe, can boast of such a service. Although the time of observation at most stations has been short, and the averages would have been more accurately represented by an extension of observations for ten to twelve years, yet the last four years of observation, for which all stations furnish data, according to the author, represent two extreme and two average years, and are therefore quite useful.

The very large mass of material permitted a sifting out of doubtful observations without impairing the number available for the construction of a rain-map of Bohemia, showing by isohyetal lines seven rain belts or zones, the lowest belt showing an annual rainfall of less than twenty inches, the second a rainfall of less than twenty-four inches, the third of twenty-eight inches, and so on.

Sufficient material was on hand from which to calculate the influence of altitude on the increase of precipitation, although for altitudes above 1,600 feet the material is not considered reliable. Yet the general law is well shown that with the altitude the quantities of precipitation increase in a retarded progression. This progression is calculated by forming zones for every hundred metres of altitude, grouping the stations in each, calculating the mean elevation and also the mean precipitation as observed for each; then by dividing the difference of precipitation in the neighboring two zones by the difference of altitude, the amount of precipitation which corresponds to each one metre of elevation within that zone is found. With this figure the average amount of rainfall which, theoretically, belongs to each station, according to its absolute elevation, can be approximated by adding to or subtracting from the mean precipitations of the zone the proper correction for the number of metres between the actual altitude of the station and the mean altitude of the zone.

And now comes the application of this method to the question in hand. The author argues that if the actually observed differs considerably from the theoretically calculated rainfall, this is an indication that special influences are at work. He finds now that of the 186 stations which he subjects to scrutiny (these offering the longest and most trustworthy observation), forty-eight show a considerable excess of the observed over the theoretically expected rainfall, and he finds also that these stations are situated in the most densely wooded portions of the kingdom. The increased rainfall on the forty-eight stations is so considerable, that enough of it may be credited to other local causes, as, for instance, to the height and form of a mountain range on one side or the other, and still leave a large balance to be accounted for. Besides, the greater amounts of rainfall at these stations have been used in calculating the averages for the altitude zones, magnifying, therefore, these averages, so that the difference between the calculated rainfall and the actually observed rainfall appears smaller than it really is.

Expressed in percentages of the amount of precipitation a large increase is shown for several localities—as much as fifty-nine per cent.—and it would seem that so great an increase would not lose its significance as bearing upon the main proposition, even after every reduction for other influences is made.

Especially important appears the comparison between two stations near the rain minimum, for the influence of the forest is here plainly shown.

B. E. Fernow.

Washington, D. C.

Correspondence.

Latinized Names of Garden Plants.

To the Editor of GARDEN AND FOREST:

Sir.—I take the liberty of applying to you as an acknowledged authority on botanical nomenclature, for information. I find that there is in the formation of a certain class of botanical names a great diversity of practice existing among the various writers for horticultural papers and those who prepare catalogues of plants. Is there any reason why I should write *Ainsworthii*, *Warnerii*, *Forstermannii*, *Nilsonii*, *Parishii*, *Roebellenii*, *Sallierii*, *Schlimerii*, and at the same time write *Regnieri*, *Barteti*, *Boxalli*, *Sedeni*, doubling the final -i in the one case and not in the other?

Linden, of Brussels, in his *Lindenia* uses the single i in all such instances. Sometimes in the same catalogue I find the same name formed at one time with a single -i and at another with the double. If you can give in your valuable paper any rule for the formation of these words you will greatly oblige

Yours very truly,

James R. Pitcher.

Short Hills, N. J.

[This question cannot be answered more clearly than by quoting the following extract from the Code of Nomenclature adopted by the American Ornithologists' Union, and as applicable to botanical as to zoological names :

"In Latinizing proper names, the simplest rule appears to be to use the termination *-us*, genitive *-i*, when the name ends with a consonant ; . . . and *-ius*, gen. *-ii*, when it ends with a vowel, as *Latreille*, *Latreillii*, etc. Since proper names for species, however, are used mainly—and we recommend that they be so used exclusively—in the possessive case, a still simpler and now generally adopted rule is to add an *i* to the name ; as *Latreille*, *Latreillei* ; *Hale*, *Halei* ; *Baird*, *Bairdi* ; but euphony may in some instances require the fuller form, and here, as in many other instances, is the case where an author has the opportunity of displaying his good taste."

The habit of Latinizing the names of garden varieties of plants—whether the result of natural variation or of artificial hybridization—is to be deplored. A much more simple and appropriate method is to use an English substantive to designate such plants, whether it be the name of the individual who originated or made known the variety, or otherwise. The general adoption of such a system of naming garden plants would simplify enormously the confusion which now exists in the nomenclature of garden botany.—Ed.]

Recent Publications.

A Provisional Host-Index of the Fungi of the United States. By W. G. Farlow and A. B. Seymour. Part I. *Polypetalæ*. Cambridge. August, 1888. Privately printed.

American mycologists and all students of American Fungi will find much needed assistance in this catalogue, which its authors have prepared and printed in the belief "that an approximately complete list of our parasitic species and their hosts would aid materially in the advance toward a more accurate study of our mycological flora, and would tend to lessen the amount of indiscriminate species-making which has already become a serious evil"—a result certainly most devoutly to be prayed for by all botanists. The host plants are grouped by families according to the system adopted in the "*Genera Plantarum*" of Hooker and Bentham, genera and species being arranged alphabetically in each family and each species being followed by a list of the parasitic Fungi found upon it.

Diagnoses Plantarum novarum Asiaticum, by C. J. Maximowicz, extracted from the Bulletin of the Imperial Academy of Sciences of St. Petersburg. The seventh part of this work, which is invaluable to all students of the botany of the countries of eastern Asia, and more especially of Japan, has recently appeared. It contains descriptive and critical remarks upon several new or imperfectly known species, an enumeration of the species of *Illicium*, *Scorzonera*, *Androsace* and *Gratiola*. An account of the large and widely distributed genus *Pedicularis*, into which are admitted nearly 250 species, occupies a very considerable part of the present issue, and is the most complete and comprehensive which has yet appeared.

A Synopsis of the Medical Botany of the United States, by J. W. Carter, St. Louis, 1888.

This is a list of the plants of North America which enter more or less regularly into the American Pharmacopœia. There are, the author tells us in his preface, 1,300 species and varieties of such plants, divided among 140 natural families and 620 genera. The list of these plants is published without characters or geographical distribution, and with the very briefest possible allusion to their medicinal properties, and it contains apparently no information not found in recent editions of the standard American Dispensatories, although the compact grouping of the species under the different genera will be found, perhaps, an aid to ready reference.

Recent Plant Portraits.

Botanical Magazine, November.

PHAJUS WALLICHII, *t.* 7023; one of the stateliest and largest flowered of all Orchids, widely distributed in the tropical portions of southern India, and not rare in cultivation. The flowers vary from chocolate-brown to pale primrose color.

PLUMUS FRAGRANS, *t.* 7024; a small Chilean tree of little ornamental value, but remarkable for the delicious fragrance of its foliage and wood. It is valued in Chili for charcoal making, the wood being considered superior for that purpose to that of any native tree. The dried leaves and twigs are occasionally used medicinally as a stimulant. The bark is used in tanning and the aromatic fruit is edible. *Plumus* belongs to the small order, *Monimiaceæ*, the plants of which are found in tropical America and Asia, Australia and tropical Africa.

IRIS KOROLKOWI, *t.* 7025; both the type and a bright lilac-purple flowered variety (var. *concolor*) of this very handsome Turkestan Iris are figured.

CALANTHE STRIATA, *t.* 7026; a native of Japan. The sepals and petals are cinnamon-brown with golden edges, internally, golden yellow on the outer surface.

AGAVE ELEMETIANA, *t.* 7025; forming, with *A. attenuata*, a peculiar section of the genus, with broad, entire soft leaves. It is a native of Mexico and has been in cultivation for nearly a quarter of a century.

ÆSCULUS TURBINATA, *Revue Horticole*, November 1st, Figs. 120-124; M. André here figures and describes the fruit of this interesting Japanese plant from the specimen in the *Arboretum Segrezianum*, which is believed to have been the first plant in Europe to produce fruit. *Æ. turbinata*, as it appears at Segrez, is a small, low stemmed, round headed tree, of compact habit, with leaves not unlike those of the common Horse-Chestnut. They are paler, however, on the lower surface, upon which the veins are more prominent. The fruit is sub-spherical, flattened on the upper surface, slightly or not at all turbinate, barely more than an inch in diameter, and produced three or four together in short, stout-stemmed racemes. The Horse-Chestnuts of eastern Asia, of which three are described, are still very imperfectly known.

DIOSPYROS VIRGINIANA, *Gardeners' Chronicle*, November 3d; a portrait of the old and very fine specimen growing in the Royal Gardens at Kew, and believed to have been presented to George III. by Archibald, Duke of Argyle, "the tree-monger." In another illustration a piece of the bark of the Persimmon is represented in a most admirable and satisfactory manner.

Meetings of Societies.

Pennsylvania Forestry Association.

THE annual meeting of the Pennsylvania Forestry Association was held in Philadelphia on Tuesday evening, November 27th. The report of the Council of the Association was a full and interesting review of the work of the Association and of the efforts for the advancement of forestry throughout the country. Among the facts set forth were these: The membership has increased to 450. Twenty-five counties are represented. The new members have been interested and liberal. With a view to employing a competent agent to deliver lectures on Forestry throughout the state, it was decided to raise a fund of \$5,000, and sixteen members have contributed \$440. Some progress was reported in the movement to convert certain small open spaces of Philadelphia into city parks. Encouraging interest has been manifested in the Michaux course of lectures, delivered by Professor Rothrock on "Trees from Florida to Maine." It is proposed to publish these, with illustrations, in *Forest Leaves*, the journal of the Association. There was increased observance of the spring Arbor Day by the public schools in tree and vine planting; the autumn day was improved by in-door instruction.

The Treasurer reported \$1,181.60 as the amount received during the year. An address to the American Forestry Congress at Atlanta was adopted, and it was resolved that the Council be empowered to send a representative to the Congress. A paper on "Forest-Planting in Virginia," by Mr. Burnet Landreth, proved to be a practical and valuable record of an experience of eighteen years in tree-planting on a 5,000-acre tract in tide-water Virginia. It was decided to publish the address and give it wide circulation.

Governor Beaver entered the hall just as the exercises were closing, and expressed profound interest in the condition and preservation of the forest area of the state, and spoke of his appointment of a Commission to attend the National Congress at Atlanta.

The officers chosen for the year were: President, Burnet Landreth; Vice-Presidents, John Birkenbine, Thomas J. Edge and Jeremiah S. Hess; Secretary, Mrs. J. P. Lundy; Treasurer, Charles E. Pancoast; Council at large, Mrs. Brinton Coxe, John P. Lundy, D.D., and Thomas H. Montgomery.

Notes.

During the past summer, a box of Carnations, sent from Providence, Rhode Island, to England, arrived at its destination with the flowers still fresh and fragrant.

At the Rookery, near Bromley, Kent, there is a Chinese *Wistaria* trained around the outer wall of a vinery and another wall running parallel to it and inclosing a piece of ground in the shape of a parallelogram. The longest branches which make this circuit have grown to a distance of 400 feet.

Tomatoes were introduced into Europe early in the seventeenth century, but for a long period were grown merely as ornamental plants. Despite the attractive appearance of the fruit, it was extremely repugnant to those who attempted to eat it, and the fact is perpetuated in the botanical name, *Lycopersicum*, which means "Wolf's Peach." Indeed, in Germany and some other parts of Europe, it is only within very recent years that the Tomato has won general recognition as a palatable and wholesome article of food.

Rosa rugosa, and the allied species, *Rosa Kamtschatica*, are being strongly recommended just now in England for the formation of hedges. They grow in that country with surprising rapidity and vigor, and develop so thickly close to the ground, that a single row of seedlings soon forms an impenetrable barrier, while the showy fruit and the beautiful flowers, which continue to appear after the fruit has reddened, and the glowing autumn colors of the foliage render such a hedge attractive to the eye for a large part of the year.

M. André, in a recent issue of the *Revue Horticole*, calls attention to the value of *Begonia semperflorens gigantea*, a hybrid between *B. lucida* and *B. semperflorens*, and its varieties, *rosea* and *Kermisina*, for the winter decoration of living rooms and conservatories. The foliage of these plants is thick and lustrous, and the pink or red flowers borne in large clusters continue to appear in the greatest profusion during the entire winter. Few plants can be cultivated more easily or are better suited for the purpose for which M. André commends them.

Professor Atwater has been placed in charge of the new Bureau of Correspondence with the Agricultural Experiment Stations at Washington. Bulletins will be issued, setting forth the results of experiments in this country, and these will be distributed among the stations. Specialists in this country and in Europe will be engaged to compile articles on subjects about which information is needed for general distribution. Another function of the Bureau will be to furnish Congress with information when legislation on agricultural matters is contemplated.

The death is announced of Mr. William H. Crawford, one of the most noted amateur horticulturists of Great Britain. A very rich man and a bachelor, he was, we are told, "personally of an ascetic temperament, but unsparing of expense when a good cause—charity, plants, books or pictures—was concerned." He may almost be called the creator of the Botanic Gardens attached to the University at Cork, and his beautiful place, Lakelands, near that city, is widely noted for its splendid collection of rare trees and shrubs from all temperate countries.

Wolfia microscopica, a species of Water Lentil native to the lakes of India, is the tiniest of all known flowering plants. It has neither stem, roots nor leaves, but consists of a fan-shaped body prolonged below into a root-like bladder, which serves to keep it in an erect position. From this bladder others develop, and so rapidly, that although a single plant is hardly perceptible to the naked eye, its offspring may in a few days cover a surface of several square yards in extent. In spite of its exiguous proportions and simple structure, the plant bears true flowers, although likewise of the simplest kind, each consisting of a single stamen or a single pistil.

The *Marysville* (California) *Appeal* has been collecting opinions from fruit-canners and shippers as to the desirability of irrigation for fruit. A wide diversity of judgment appears, but the general sentiment seems to be that fruit from trees not irrigated will keep better and endure long distance transportation more safely. Fruit from irrigated orchards is larger, fairer, better colored; but, being more juicy, it goes to pieces more readily. Some persons who prefer non-irrigated fruit for shipping, believe that in the same regions irrigated fruit is best for canning, drying and local use. Whenever it is possible by cultivation and thinning to conserve enough ground moisture to perfect a crop, irrigation is not generally advised. When it is practiced, great judgment should be exercised. When trees are watered copiously up to the time

of the fruit harvest, it is said that quality and flavor may be sacrificed for size and color. Winter and spring irrigation is commended, and to have its best effect the land should be well fertilized.

The new law regulating the forests of Russia, with a view to their preservation, went into effect on the first of last January. The law applies to all Russia, including the Caucasus and Poland, but not to Finland, which has its own forest laws. The rights of property are not unnecessarily interfered with, but the new law provides for the control and management of the forests of individuals where the public welfare seems to demand it, and the cutting down of such forests is prohibited when it might endanger the best interests of the whole community. A commission is created in each province, with the Governor at its head, for the purpose of administering the law and protecting the rights of property-owners. As might have been expected in the case of a law of this character, its application has been beset by many difficulties growing out of the conflicts between agricultural and forest interests and the unwillingness of the people to submit to any control in the management of their property. The law, however, is considered successful, and its application may be expected to increase immensely the material prosperity of the Empire.

It is well known that a great majority of the insects most destructive to vegetation which now infest this country have been imported from foreign countries and naturalized here. The unusual destructiveness of these species is generally accounted for by the fact that their natural enemies are not imported with them, so that their reproductive powers have freer play here than they had where such natural checks occur. But in a recent number of *Insect Life*, Professor Riley adds, as an additional reason, that most of such species are introduced from Europe or the older civilizations where, on evolutionary grounds, it is natural to suppose that they are the very species which have become accustomed to the civilized conditions induced during so many centuries. In other words, the species which most abound and have most successfully accommodated themselves to such artificial conditions, have, in the geologically brief period of man's pre-eminence, acquired advantages over species which have not been submitted to such environment. The former, when brought into competition with the latter, under such conditions, rapidly outnumber them and get the upper hand.

Every one has been writing about Chrysanthemums of late, but no one more interestingly than "Listener," of the Boston *Evening Transcript*. The yellow *Neesima*, for instance, one of the season's novelties from Japan, he says, "is the Chrysanthemum of Chrysanthemums—the loveliest of all the tribe, as well as the most characteristic, the most typical. . . . Its fluffly gracefulness, its long, slender, slightly curved petals, each like the line of Fusi-yama's curve, are intensely Japanese. One wonders whether the Japanese formed their art on the basis of this flower, or whether the flower was developed into its present form by contact with the Japanese genius." This praise is not too high nor is the admiration expressed for the variety in color and form shown in every large exhibition of Chrysanthemums. "The most striking feature of the exhibition, taking it as a whole, is, to the amateur without professional knowledge of the Chrysanthemum, the delicacy of the prevailing colors. . . . What a marvelous effect of color, . . . and what a preponderance of delicate shades, especially in light yellows and delicious pinks. . . . The strange and unusual tints . . . in almost all the exhibits it would be impossible to dwell upon, they are so infinite. There were many who stopped to admire the Elihu Vedder sort of pink of a Chrysanthemum called the Monsieur Freeman, . . . and over on the other side of the hall there was a tiny flower, growing in myriads on a big bush, that copied the homely tint of the Red Clover, that has blossomed for a week under the summer sun. . . . One may stand aghast, in a general sort of way, at the infinite varieties of the Chrysanthemum, but he cannot get a better idea of the scope of the flower, so to speak, than by comparing a certain big Peony-red flower of the species, which must be at least six inches across, and which has great, coarse, outward curving petals and a vacant, brown-red expanse in the centre, . . . with a little yellow flower on a big bush which bore the name of La Vogue—a bad name, because there was not the slightest trace of modishness about the little flower. The big red flower was all gloom and severity in its aspect; the little yellow flower carried with it an air of positive gaiety. . . . Probably there were 200 of these smiling little blossoms on the bush and every one was a distinct inspiration to merriment."

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The Artistic Aspects of Trees.—V.

THE knowledge we need to gain, if we are to utilize to the best advantage such opportunities for planting as present themselves to us, is not a mere knowledge of the various forms and colors and textures that we may find in trees—it is a knowledge of trees themselves. Each species, each variety, presents itself to us as a whole made up of three blended elements, and it is the whole as such with which we should strive to familiarize ourselves. We must learn, not which tints or shapes in the abstract harmonize with others, but which trees are, from the point of view of beauty, fitting to associate with others. We must learn how each one looks in all the stages of its growth, at various seasons of the year, and under differing conditions of light and shade, of nearness and remoteness. If a certain tree seems out of place, we must be able to say not merely why we think so, but what other tree might better have been chosen. And when a spot is to be planted, we must be able to picture to ourselves how it should be filled, not in vague harmonies of abstract hues and shapes, but in definite mental portraits of actual trees.

Too often a much lower degree of knowledge than this is thought all-sufficient. Too often it is supposed that when one can recognize the trees he most commonly meets and call them by name, he really knows them. But he does not unless he can see them, so to speak, when he does not see them—unless he can recall the elements which make up their individuality and appreciate vividly their special qualities. We all can recognize our friends when we meet them. But something more than such knowledge as this is needed by the painter when he wants to compose a picture of many figures or to draw a face which shall have a given expression; and something more by the connoisseur, if he is properly to estimate and thoroughly to enjoy the artist's work. And as the painter and the connoisseur study and assimilate all they see, so too should the landscape gardener, and, no less, the lover of nature, if he wants to understand and enjoy to the full all that is offered him either in the unassisted work of nature, or in that which nature and the landscape-gardener have produced in partnership.

To study art as a preparation for the study and appreciation of Nature may seem, at first thought, a reversal of the right order of things. But it is in reality a wise course. If an artist were never anything more than a mere recorder of natural facts, a mere reporter in prosaic speech of things actually seen in this spot or that, his results would still be of service, enlarging our field of observation by the addition of his field and preserving for constant examination effects which are transitory in nature. But a true artist is something much more than this. He has at his command the power to preserve general truth of effect, and yet accentuate certain special truths more forcibly than, to our eyes, Nature has presented them. This power of interpretation in one man's work makes this thing more plain than Nature made it; in another man's it makes another thing more plain, and in the combined work of all makes Nature, as a whole, more plain, more vivid, more impressive. No matter how carefully and patiently we may study Nature in herself, we do not appreciate her to the full until we know what the great artists of the world have seen in her—how her forms, her textures, her colors, have appeared to eyes, tastes and feelings which by birth are clearer and keener than those of the average man, and by incessant training have been developed to a still higher degree of power.

In the study of form especially familiarity with landscape painting is of infinite value. Colors are so transmuted on canvas, and their variability from hour to hour in Nature is so different from their permanence in a picture, that to know what they really mean in Nature we must study them there. But forms are less variable in themselves, and are transferred to canvas with less intermixture of human personalities; and in no way can taste be so readily cultivated with regard to them as by a study of good landscape painting. Here it is that the painter's poetic power comes to help us—the power of idealization—of seizing this or that idea of Nature and expressing it more perfectly than, in this warring world, she herself is often able to express it. Colors so beautiful as those we find every day in Nature we seldom see approached in paint; but forms more perfect than those we are apt to see alive we constantly see on canvas. This is true even of the pictures of to-day, when of all artistic qualities form is the least highly valued; and it is even truer of the pictures of elder generations. The great classic masters of landscape—Claude, for instance, and Poussin and Ruysdael—are most valuable to the student of form in Nature; and, fortunately, their works can be as profitably consulted from this point of view in engraved productions as in their actual presence. Of course, it is not as text-books that they can be consulted, but as stimulants, as cultivators of the taste, as teachers of the great lesson, what is meant by beautiful forms, by satisfactory association of textures, by strong or graceful contours, by effective or subtle contrasts of light and shadow, by variety in unity, by diversity in harmony, by breadth, simplicity, repose and charm. These things they teach—not just what or how to plant in any possible given case; but these things we must learn in advance of any planting if we are to make a work of art of the result.

It is stated in the New Hampshire papers that preparations have been made to cut 6,000,000 feet of Spruce lumber this winter from the forests which lie about the base and cover the lower slopes of Mount Washington, the most important and the most frequently visited of the New England mountains. Six million feet of lumber is not a very large amount. It might be cut, if proper care was taken in doing it, out of the White Mountain forests without inflicting upon them any serious injury, and without in any way impairing the value of the White Mountain region as a reservoir of moisture, or as an agreeable and health-giving summer-resort. But care never is taken, or only very rarely, in American wood-cutting operations, and it is a foregone conclusion that in this case it will be

followed by disastrous fires, which will render useless what is now of great value.

The great reservoir of New England lies in the forests which cover the White Mountains and the elevated regions which surround them. This is also one of the most valuable and most generally frequented summer sanitariums in the United States. Its forests make it valuable. When they are gone its value as a natural reservoir is destroyed, and its value, with its beauty, to summer visitors and summer travelers, will disappear. These forests are the property of individuals, and no one can deny their right to cut them off if they think it is for their advantage to do so. Opinions may differ whether it is for the advantage of forest-owners to manage forests in such a way that three-fourths of their property is allowed to go to hopeless waste; but there can be no doubt—no question, that it is for the interest of the public that the White Mountain forests should be perpetuated in all their beauty and usefulness. The best investment the State of New Hampshire can make would be to buy up all this forest-region and hold it perpetually as a forest-reservation. The money it would cost would come back many times over in abundant water supply, and in the yearly disbursements of thousands of visitors from beyond the borders of the state. The railroads, too, which carry White Mountain visitors, and the owners of the hotels who feed and keep them, might do worse than secure control of this whole region and manage it with the view of making it perpetually attractive, which would mean perpetual preservation of the forests.

Whether, however, this region is purchased by the State of New Hampshire, or by a corporation holding it as an investment to be managed with a view of drawing from it the largest possible returns consistent with stability, it is certain that unless one of these plans, or some other, looking to the permanent safety of the forests, can be adopted, this region and its usefulness will be ruined.

Monsieur Buser, the custodian of the Candolean herbarium, has just published a supplementary volume to Bossier's "*Flora Orientalis*," containing the results of the latest investigations made upon the plants of the vast region covered by the work of the famous Swiss botanist, who died in 1885. A most interesting and appreciative notice of Bossier's life and of his contributions to science, from the pen of his compatriot, Dr. H. Christ, precedes the strictly botanical portion of the volume, which is further enriched by a portrait of Bossier. There are views, too, of the bust of Bossier erected in the Botanic Garden in Geneva by his sister, the Countess Agénor de Gasparin, and of the building containing his herbarium, one of the largest and most valuable in Europe, now the property of the city of Geneva.

The name of Bossier, one of the most distinguished of the group of systematic botanists who have produced Floras of great natural regions, will not soon disappear from the annals of horticulture. It was Bossier who discovered, during his first Spanish journey—afterwards described in one of the most delightful books of botanical travel—upon the summit of the Sierra Bermiga, near Estepena, the beautiful Spanish Fir (*Abies Pinsapo*), which he introduced into cultivation the same year; and among humbler plants for which our gardens are indebted to his zeal it is only necessary to mention the lovely *Chionodoxa Lucilæ*, which he discovered among the melting snows on the alpine summits of the western Tmolus, above Bozdagh, in Asia Minor, and which he dedicated to his wife, the companion of some of his early journeys. Bossier was a most successful cultivator of alpine plants, and his rock-garden, which he established as early as 1852, at his country place of Valeyres, at the foot of the Jura, must have been one of the most interesting ever made. The journeys of his later years (and the number was astonishing, in view of the vast amount of literary and herbarium work which he accomplished) were undertaken for the purpose of securing rare plants for his garden for which

he laid under contribution all collectors and all countries, and the plants others could not find, he went in search of himself. Here were mingled plants from the Rocky Mountains to the Himalayas, including those from every mountain chain of southern Europe and of the Orient, which no one has ever known, botanically, so well as Bossier. He cultivated, too, a large collection of exotic Orchids at his winter-home on the shores of the lake, near Geneva.

An appropriation of \$100,000, to enable the United States Geological Survey to begin an investigation into the practicability of inaugurating a national system of irrigation, by which it is hoped that immense tracts of lands in the Western States and Territories, now barren and worthless, can be made available for agriculture, was included in the Sundry Civil Appropriation Bill passed at the last session of Congress. Major Powell has estimated that the territory which can be reclaimed for agriculture by irrigation is equal in extent to the whole area now cultivated in the United States. It is impossible to determine, of course, whether his estimate is correct or not, but it is safe to say, with all due allowances for over-confidence in the possibilities of irrigation, as applied in western North America, that this new enterprise of the government is one of the most important, if not the most important, it has ever undertaken, and that eventually the national wealth must be increased by it enormously. Homes will be created for millions of industrious and prosperous families, and the natural products of the country will be increased enormously, it is safe to say. This appropriation, to which not a dozen members of Congress, probably, ever devoted a moment's consideration, seems destined to mark a new era in the prosperity of the nation.

The Pines in Mid-November.

THE foliage has mostly disappeared from deciduous trees and shrubs, but many herbaceous plants are wonderfully preserved. They escaped the light frosts of October, and the unusual warmth of November has endowed them with fresh vigor, so that in chosen spots among the Pines we still find many beautiful flowers. Some of the Asters, and even Goldenrods, are blooming still. But one of the most delightful surprises is a bed of blue Violets—a form of *Viola cucullata*. Not even in the spring-time have I ever found plants blooming more profusely than these. The flowers are large and bright blue, and, together with their leaves, make charming bouquets. But the most attractive novelty is a little patch of the violet Wood Sorrel (*Oxalis violacea*) in full bloom. It is under an old Pine tree; and standing well up above the dry needles which carpet the ground are a good many pretty flower-scapes, with several bright blossoms on each, but not a leaf has made its appearance. I shall keep watch of the future behavior of these plants. Next spring they will show probably nothing but leaves.

Another handsome flower is the Soapwort Gentian (*Gentiana Saponaria*), with half-closed corollas, but bright and beautiful with its smooth, deep green leaves, some of them inclining to a purplish tint. And near by is its small relative, *Bartonia tenella*, still in bloom. This little plant has small, inconspicuous white flowers, but in the middle of November the most insignificant flower that braves the weather commands our admiration for its sturdy character. I also find fair specimens of *Polygala lutea* in flower, and a species of *Xyris*.

The foliage that still clings to many trees and shrubs, which seem half inclined to be evergreen, is an interesting study. The leaves of the Swamp Magnolias, especially the younger ones, are as bright and shining as in midsummer, and those of the smooth Alder (*Alnus serrulata*) and Sweet Fern are still abundant, fresh and green. The leaves of the Wax Myrtle (*Myrica cerifera*) are now deliciously fragrant, and show no signs of loosening their hold. Indeed, like the Sweet Fern in sheltered spots, the shrub is nearly or quite evergreen, and holds its foliage well into spring.

In all my pleasant autumn rambles I have found nothing more beautiful than the running Swamp Blackberry (*Rubus hispidus*). Its delicate tracery of stem and leaf are laid over a bed of damp green moss. The foliage is charmingly colored in crimson, scarlet and purple.

The slender stems or long runners are quite free from prickles, and wind around among beautiful clumps of the Pitcher-plant, which are also gorgeously colored with crimson and purple veins. The bright cups of the Pitcher-plant are so flower-like, that they lure many insects into their depths, from which there is no escape. Two or three species of Lycopodium wind in and out among the moss, now hidden entirely from sight and again reappearing to throw up fertile spikes from a few inches to more than a foot in height. Standing a little in the background is the narrow-leaved Cat-tail (*Typha angustifolia*), which adds a special grace to the whole picture. This species is more rare and delicate than the common Cat-tail (*T. latifolia*), which grows in stagnant ponds and swamps throughout the United States. There is as much difference between these two Cat-tail flags as between the large Blue flag (*Iris versicolor*) and the slender Blue flag (*I. Virginica*), both of which grow near by.

The Groundsel-tree (*Baccharis halimifolia*) is now conspicuous with its long, white, silky pappus. Although it belongs to the largest order of flowering plants, it is the only one in this vast order, in our temperate climates, that attains the dignity of treehood. In the Pines it grows from ten to fifteen feet in height, and in autumn is a very marked feature in the landscape. The copious pure white pappus with which the fertile plants are enshrouded, at a little distance look like a mass of white flowers, strangely out of season in their rich setting of autumn foliage.

Two or three species of Dodder are now brought into view as the leaves of their supporters have withered or fallen. *Cuscuta glomerata* is the most notable, as its knotted cords strangle and sap the life of its foster plants until they are dwarfed, prematurely fade, and finally die. This species usually attacks the Composite, and sometimes other herbaceous plants. It starts from the ground like any respectable plant, and for awhile is self-supporting, and is quite attractive in appearance, with its bright orange stems. But it soon attaches itself close to some other herb, gives up its hold upon the earth, and relies entirely upon its host for support. Another species (*C. tenuiflora*) attaches itself to the shrubs among the Pines. This species has the appearance of twining more loosely than the former, and climbs higher on its foster plant.

Attractive plants are still found in the more exposed places on dry sandy soil. Among them is the smaller Pinweed (*Lechea minor*), a pretty little Heath-like plant growing in masses, but each plant is worth examining by itself, as its small single stem spreads out into numerous branches, giving it the appearance of a miniature tree. The branches and foliage form a dense mass a foot or more across the top, and the foliage has now taken on a purplish hue, making it very pretty and effective. These little tree-like plants are less than a foot in height, and grow in the most unpromising soil.

Hudsonia tomentosa is another little bushy Heath-like shrub about a foot in height, and covered with small persistent grayish leaves, giving the plant a hoary look. This, too, grows in the sand, even when it is so loose as to drift before the wind. Very often considerable patches of the plant are covered up in this way, and remain so until the wind from another direction blows the sand away.

Vineland, N. J., November 17th.

Mary Treat.

The source of the superiority of good landscape gardening lies in the artist's removing from the scene of his operations whatever is hostile to its effect or unsuited to its character; and, by adding only such circumstances as accord with the general expression of the scene, awakening emotions more full, more simple and more harmonious.—*Uvedale Price, 1796.*

To range the shrubs and small trees so that they may mutually set off the beauties and conceal the blemishes of each other; to aim at no effects which depend on nicety for their effects, and which the soil, the exposure, or the season of the day may destroy; to attend more to the groups than to the individuals; and to consider the whole as a plantation, not as a collection of plants, are the best general rules which can be given concerning them.—*Thomas Whately, 1770.*

It cannot be too strongly insisted upon that Nature is to be followed, not spoiled at the expense of labor and ill-employed wealth, not strangely and violently disfigured in the effort to embellish. All gardens cannot be planned after some one pleasing model. The special character of the ground must be regarded. By attending to this we shall be more faithful to Nature, and a greater number of gardens will be beautiful without being servile copies.—*W. S. Gilpin, 1832.*

Foreign Correspondence.

London Letter.

POTATO disease has been exceptionally virulent in England this year. Few kinds have escaped, many have suffered very severely, while in some districts the crop has been almost totally destroyed. We are no nearer a disease-proof Potato than we ever were, and as the wild tubers are said to be affected by it, there seems little hope in that direction. But the simple plan recommended by Professor Jensen, of Copenhagen, which is nothing more than high earthing in autumn, appears likely to prove a palliative at least. This has been shown recently by some experiments made at Chiswick, and which have been watched and reported upon by Dr. M. T. Masters. In August a portion of a plot of the variety Schoolmaster was high moulded, and another portion treated in the ordinary way. They were lifted on September 29th and carefully examined, the result being, that of those moulded in the ordinary way twenty-six per cent. were diseased, and that only ten per cent. of those moulded high, in accordance with what is known as the Jensenian treatment, were affected.

Orchids in November are either asleep or preparing for their spring display. Of course, there are Cypripediums and a few odds and ends besides, but, at this time of year, Orchid-houses are dull. Of new kinds, we have two forms of the richly colored *Cattleya aurea*, which are named *C. Massaiana* and *C. chrysotoxa*. The former is a supposed natural hybrid, *C. Gigas* being the other parent. The sepals and petals are rosy-lilac, the lips being large, crimson, with golden reticulations and two eye-like blotches of yellow. *C. chrysotoxa* is a very robust and large-flowered form of *C. aurea*, with the colors clear and rich in tint. Both kinds are Sander's introductions. *Lalia Perrini*, var. *alba*, is a form with flowers wholly snow-white, without any purple or yellow markings on the labellum. The leaves of the variety are larger and broader than in the type. It was introduced by Mr. Sander, and is now in the famous collection of Mr. R. H. Measures, Streatham.

The fortnightly meeting of the Royal Horticultural Society, held on the 14th instant, was devoted almost entirely to talk about the affairs and future of the society. Very few plants were exhibited, and of these only the following were noteworthy: (1) Malayan Rhododendrons.—The extraordinary success attained by the Messrs. Veitch in hybridizing and cross-breeding among plants of all kinds is very well attested by the marked improvement made in the habit, colors and variety of this section of Rhododendron. From two or three comparatively poor flowered species, obtained from Java and the Malay regions, at least a score of beautiful hybrids have been raised by the famous Chelsea firm, and all in the course of half a dozen years. Flowers of a dozen of the best sorts were sent to the meeting last Tuesday, amongst them being white, pink, crimson, nankeen, canary and salmon colors. These plants are easily grown, they flower freely, and the blooms last a month or more. (2) *Lalia Victoria*, a hybrid raised by the Messrs. Veitch from *L. crispa* and *L. Dominiana*. It resembles the former in most points, differing chiefly in the form and color of the labellum, which is oblong and spreading in front, undulated, and colored rich maroon-purple. I have seen forms of *Crispa* almost as good. It obtained a first-class certificate. (3) Chrysanthemums Mrs. Garner and Avalanche, which were certificated. They are both Japanese, the former very full, five inches across, rather flat, the petals narrow, and colored deep yellow, tinged with bronze; the other is also large, globose, very broad in petal, and of the purest white. They were from Mr. G. Stevens, of Putney. (4) Flowers of *Nymphæas* sent from Kew, where these plants are well represented and successfully grown. Those shown were all forms of the gigantic *N. Lotus*, the best of them being the seedling named *Kewensis*. The new tuber, *Stachys tuberifera*, was also certificated. At present it has little to recommend it, but it may be developed into a useful vegetable. The potato had not much to recommend it when it first came to England.

Kew has the following plants of interest in flower: (1) *Kennedy Marryatta*.—If your readers are not acquainted with this plant, permit me to recommend it strongly as a first-rate green-house climber. Planted in a bed of rich loamy soil, it grows very rapidly, soon covering a large space with its long, graceful branches. For training over pillars and rafters it is invaluable. The younger branches are pendent, a yard or more long, the leaves trifoliate, each leaflet ovate and two inches long, and the whole plant is covered with soft, silky hairs. The flowers are in short axillary corymbs, on stalks an inch long, each bearing four flowers, something like Sweet

Peas, and of the brightest scarlet color. Like all the Kenne-dyas, it is Australian. The Kew plant has been known to flower profusely for at least six months at a stretch. (2) *Hibbertia dentata*, which is another green-house climber of great attraction. It has oblong leaves about three inches in length and colored deep chocolate; the flowers are large, single and golden yellow. During winter this plant makes a pretty display. (3) *Senecio Ghiesbreghtii*, which is used here sometimes for out-door bedding in summer, but it is of greater value as a flowering plant for large conservatories in winter. The stem is stout and from six to ten feet high, with large ovate leaves a foot long, and enormous terminal corymbs of deep yellow flowers. It is planted in the beds in the Kew conservatories, and is in grand condition now. No doubt you cultivate this plant in your gardens, as it is Mexican, but it may not be utilized with you as a winter-flowering subject. (4) *Dahlia imperialis*, which is another giant composite from Mexico. In the gardens bordering the Mediterranean it attains magnificent dimensions, and at Kew it grows to a great size. The largest plants are twelve feet high, with a stout single stem, clothed with very large decomposed leaves, those at the base of the stem being about a yard through. The flowers are in large spreading panicles, very numerous on well-grown plants, and each one is six inches across, somewhat cupped, the single row of petals broad at the base and gradually narrowed to a long point; they are white, with a faint tinge of purple, the small cluster of disc-florets being yellow. As this plant blooms in November and December, it is valuable for the decoration of large houses. At Kew it is started early in spring in a little warmth, and then placed outside when the weather is warm enough. It requires a little heat in October and November to bring the flowers to perfection. (5) *Befaria glauca*, which is an interesting green-house shrub, introduced to Kew a year or two ago from the Andes of Peru. It flowered for the first time last year, and a plant of it is again in bloom. The habit is that of a Rhododendron, the leaves are about two inches long, glaucous beneath, and the flowers are in terminal spikes. The plant is only three feet high, with one stem, but this bears a cluster of seven erect spikes, each nine inches long, and bearing a score of flowers, which are bell-shaped, one inch across, and rose-colored. This plant is known here as the Andean Rhododendron. It is Ericaceous and evergreen.

Out-of-doors there is, of course, a scarcity of flowers, but we have three little attractions which deserve mention. They are: first, the autumn-flowering species of Crocus. The Kew collection of Croci is exceptionally rich, and they are arranged in two groups, the one autumn- and the other spring-flowering. Until only a year or so ago the autumn Croci were unknown in English horticulture here, but, thanks mainly to Kew, they are rapidly appearing in all good gardens. Of course, the display in the autumn depends very much on the nature of the weather, and in November it is seldom favorable to flowers. Lately, however, mildness, with a little sunshine now and then, have favored us, and consequently these Croci are good just now. Amongst them are white, lilac, mauve, purple, blue, and variegated. Altogether there are about thirty species of Crocus which flower between August and December, the first to appear being the pretty *C. Scharojani* of the brightest orange color. The cultural requirements of the species which bloom in autumn are exactly those of the better known spring-flowering kinds. The winter Daffodil (*Sternbergia lutea*) is another pretty and easily grown hardy plant which flowers at this time of year. At Kew it is planted in borders and bogs, where it never fails to develop its large, bright yellow, Crocus-like blooms. Close to it, or growing mingled with it, is the crimson-flowered Winter Gladiolus (*Schizostylis coccinea*), and the combination is pretty in effect. I suppose every one knows the value of the Schizostylis as a winter-flowering plant for the green-house, but is not often seen in a border out-of-doors. At Kew it remains in bloom till December, unless the frost is very severe, or there is a long spell of heavy fogs. Is *Hippophae rhamnoides* used as a garden plant in America? Here it is native, and consequently not often met with in gardens. It is the Sea-Buckthorn of every-day people. Planted on the edge of the lake, so that its roots are constantly under water, this shrub is a great success at Kew, every branch being now weighed down with the enormous crop of bright yellow berries. It is easily grown, and flowers and fruits freely every year. Being dioecious, however, one must be careful to get both sexes and plant them near each other, or no fruit will come. The berries have a strong styptic flavor similar to that of the Oleaster, to which the Sea-Buckthorn is closely related. *Crataegus Lelandi*, a form of the well-known Pyracantha, is a new addition to winter-berried hardy shrubs. It is useful as a pot plant, owing to

its habit of fruiting freely when only a few inches high. Large specimens are now a gorgeous picture of the brightest orange scarlet, the berries crowding on the branches much more than I have ever seen the old Pyracantha do. Whether grown against a wall or as a specimen shrub on a lawn, it is a perfect success. We are indebted to the Messrs. Veitch for its introduction.

W. Watson.

November 16th.

New or Little Known Plants.

Berberis Fremonti.*

THE Mahonia section of the genus *Berberis* is the exclusively prevalent one upon the western side of our continent, ranging from British Columbia to Central Mexico, and from the Pacific Ocean to the Rocky Mountains and the Gulf of Mexico, and is represented by half a dozen or more species within the limits of the United States. It presents also an exception to the general rule of resemblance of the eastern-Asiatic flora to our Atlantic-coast flora rather than to that of the Pacific, inasmuch as several species of this section are found in Japan, China and the north-eastern borders of India, and nowhere else in the Old World.

Mahonia differs from *Berberis* proper in the full development of all the leaves, and the consequent absence of spines (which in the common Barberry are abortive, primary leaves), and in the pinnation of the leaves, which consist of one or more pairs of leaflets upon a common petiole. This petiole is jointed at the base of each pair of leaflets. There are no differences of importance either in the flowers or fruit, and it is easily seen how the Barberry is simply a Mahonia with undeveloped foliage, the primary leaves being reduced to a cluster of spines, and the secondary pinnate leaves to the single terminal leaflet which is always jointed upon the very short petiole. The leaflets in Mahonia are always evergreen and spinosely dentate, usually rigid and glossy, and often strongly reticulate-veined. The berries are globular, or nearly so, and often blue or nearly black. The species most frequently met with in cultivation are the well-known "Oregon Grape," the *B. aquifolium* of the Pacific Coast, and *B. Japonica* from Japan. Several other species are doubtless as well worth cultivation.

Berberis Fremonti, the characters of which are well shown in Mr. Faxon's figure, is a shrub growing from five to fifteen feet high, found in the arid regions of the southwest from Texas to Arizona and Lower California. It is very peculiar in the character of its fruit, which at maturity becomes dry and inflated, inclosing six or eight seeds. What appears to be a form of this species, with comparatively broader, elliptical and less spiny leaves, occurs in central Texas, and was named by Mr. Buckley *B. Swaseyi*. Little is known respecting it.

S. W.

Pentstemon rotundifolius.

OF this plant, which was figured and described in the issue of this journal for November 28th, Mr. Pringle writes:

In the autumn of 1886 was found hanging quite in the manner of rock-brakes, from thinnest seams of dry granitic cliffs (on their sides least exposed to the sun), among the dry mountain chains southward from Chihuahua, a most singular Pentstemon, of so much beauty that Dr. Gray, when naming it as above, desired that efforts be made to bring it into cultivation. Seeds were accordingly distributed to botanic gardens, but in consideration of the strange habitat of the plant, it was with slight hopes of success. The plant is evergreen, with short stems which branch freely; its leaves are broad, very thick and leathery, glaucous; its flowers tubular, scarlet.

On its dry wall of rock, through winter frosts and the long term of fierce heats and absolute drought, when it

*B. FREMONTI, Torr., in Bot. Mex. Bound. Surv., 30.

would not seem possible for its roots to gather a particle of moisture, yet never dropping its leaves, this plant maintains an existence for many years, a remarkable example of adaptation to environment. When the rains begin, whether it be in March or not until August, it puts forth new branches and flowers, and continues to bloom while the atmosphere retains any considerable degree of humidity.

Nature's plan for disseminating and perpetuating the species amidst conditions so exceptional is also interesting. However pendant the stems, the dehiscent capsules are held upright by a bending of their pedicels; therefore a strong wind is required for the dislodgment of the seeds, a wind which will sweep them along the face of the cliffs, and haply plant one here and there in an open seam. It must be that all the seeds which fall upon the soil perish; for I have never seen a plant growing in soil about the dozen localities for this species repeatedly visited by me. Restricted in its habitat to so uncommon and austere conditions, the species is, as would be expected, extremely rare. I have not yet secured sufficient material to place it in my distributions of *Plante Mexicana*.

Cultural Department.

Mushrooms.

A NUMBER of market gardeners on Long Island have for some years been growing Mushrooms for market, and many others are now building cellars for this purpose. Mr. Abram Van Sicklin is the pioneer in this business, and perhaps the largest grower on the Island. Not only has he large and commodious cellars devoted to the cultivation of Mushrooms, but he also grows them in his salad-houses in beds under the benches on which the Lettuces are grown. In these houses the beds are now made, and extend the whole length of the houses, often a hundred feet or more, and under the middle and side benches. But as the night temperature of 40° to 45° required for Lettuces now (last week of November) is too low for Mushrooms (55° to 60°), the surface of the beds is covered over with salt hay. The heat of the manure in the beds is sufficient to spread the spawn, and the hay saves the surface of the beds from the chill of a low atmospheric temperature.

Mushrooms grow as well under a hay or straw covering as they do without it, but it is much more troublesome to gather them when covered. In Mr. Van Sicklin's cellar the beds are long and flat, arranged on the floor and on berth-like shelves above the floor-beds. He uses English brick-spawn, but has also used the French flake-spawn. He has made his own spawn, but, all things considered, believes it is cheaper and safer to use imported spawn, although the crop is uncertain at best.

Mr. Denton, of Aqueduct Station, is a successful grower of Mushrooms who has no greenhouses, but two large cellars. The one now being filled is some twenty-four feet square and about seven feet high, with a dry earthen floor. The beds are about four to five feet wide and arranged lengthwise on the floor, with narrow passages between them, and two shelf-like beds are fixed berth-fashion above each floor-bed, and at equal distances from one another. The bottom beds are floored and the shelves for beds are made and faced with rough hemlock boards. An iron stove and a line of sheet-iron smoke-pipe is used for heating the cellar.

The manure used is the ordinary stable manure from Brooklyn, which is hauled home on the return trips from market. This manure costs twenty-five cents a wagon-load in Brooklyn. After

a pile of it has accumulated the most strawy portions are shaken out and the rest thrown into a pile in a large shed to ferment. Here it is turned as often as necessary to prevent burning; after it is in active ferment it requires turning every day till the violent heat subsides, which may be in three weeks after the manure was brought into the shed. Mr. Denton has better success with his beds made up of loam and manure than when manure alone is used. Therefore, when the manure is in good condition he adds about one-third of its bulk of common field loam, mixing all well together before making the beds. The beds, especially the shelf-beds, can be made firm more easily when this loam mixture is used, the manure alone being too springy to pack well. The facings, or sides of the beds, are one board, or ten inches wide, and therefore the compost can hardly be more than eight inches deep at first, if space is left for coating it over with loam after spawning. Mr. Denton finds most danger in allowing the manure to become too warm after the beds are put up; at the same time he likes good lively manure to begin with. When the temperature falls to 90° he spawns the beds. He uses both French and English spawn, and buys the imported article. While the English spawn may yield the largest Mushrooms, he thinks that those produced from the French spawn are, in proportion to their size, heavier and



Fig. 77.—*Berberis Fremonti*.—See page 496.

more solid. In about six weeks after spawning he expects Mushrooms. A temperature of about 60° is maintained, but with an ordinary iron stove it is not an easy matter to keep up a steady temperature. And the stove heat, too, is apt to dry the earth on the surface of the beds, in which case they are freely sprinkled with water, but enough is not given to soak through to the manure.

While generally successful, Mr. Denton's crop varies a good deal in different years. Two years ago from these two cellars he gathered 2,200 pounds of Mushrooms, while last year his crop from the same space was less than 1,700 pounds. He is inclined to give a good deal of credit for the heaviest yield to the freshness and sweetness of his cellar that season, as he had it thoroughly cleaned out and limewashed in autumn before he made up his beds.

The one thing about Mr. Denton's arrangement that seemed faulty was the parching stove. A hot-air apparatus seems out of place wherever plants of any sort are grown, be they Mushrooms, Roses or Orchids. Besides, here is a big iron stove occupying a space which might be devoted to part of another floor bed and two whole shelf beds. A base-burner, hot water boiler and two three-inch hot water pipes run around inside the cellar, would seem preferable. The pipes could be run close alongside one of the shelves and would not be in the way at all, and any danger of their overheating the edge of the bed by which they were running could be averted by having a temporary board set alongside of them, making the shelf two boards high instead of one. No deep stock hole is required for these little boilers; they can be run on the common level of the cellar, and could be set into a niche in the wall four by six feet square. Two hods of coal a day will heat 300 feet of three-inch pipe. Surely this is better than any stove, and the first expense is the only one, for such an apparatus is simple and durable. We heat our Mushroom houses with this kind of boiler and hot water pipes, and nothing could do the work more effectively.

Glen Cove, N. Y.

Wm. Falconer.

Fruits for Cold Climates.

IT must be set down as a rule that a fruit-tree should be of a variety that will endure all weathers in the place where it is planted. It must be hardy enough to stand the test winter; otherwise, just when the owner is looking for a first full crop, he may find only a dead tree.

Experience has proved that the fruit-trees of western Europe and their seedlings will not, as a rule, endure the winter climate of similar latitudes on the American Continent. All of Europe north of Rome is north of Boston. Boston is nearly the extreme north limit of the Peach, Plum, Quince and Apricot; and of the Apples and Pears of north-western Europe very few can be planted with profit more than 100 miles north of Boston. Seedlings from these do not, as a rule, show more resistance to cold than their parents. So seldom do they, that those of us who have had most experience at once suspect that such a seedling is an accidental cross with a hardier variety, like those of Russia and Siberia.

The Russian tree-fruits are undoubtedly of hybrid origin. Those of Poland and the Baltic provinces are much mixed and crossed with west European species. But, working eastward in the empire, less and less of this blood is found; and in the valley of the Volga and the Steppe region the influence of north Asia stock preponderates. It is from these trees that we get our most perfect "iron-clads" of all the tree-fruits.

Our north-eastern states and provinces require hardiness against cold alone; but in the Prairie States this is not enough. Intense summer heat and drought, and the fatal sap-blight, must also be encountered there; and trees for that region must thus be triply clad. The fruits of the Russian and Asiatic steppes furnish the best material to meet these contingencies.

As New England lies mostly on the latitudes of southern Europe, so Canada lies mostly on the latitudes of Russia and Siberia. Not only climate, but the length of seasons and of days, should be considered in estimating the value of fruit-trees. The winter Apples of Russia are many, but south of 45° they are only early winter or fall sorts. This lessens their value for our Northern States; but as they can be grown among our tender long-keepers, there is a fair probability that iron-clad crosses can be obtained that will prove long-keeping below latitude 45°.

Unquestionably many European trees are, in their seedlings, gradually adapting themselves to the American climate. The law of the survival of the fittest is all the time in operation, and interested parties are finding along the northern limits of our orchard region (and even within it) seedling varieties which show unusual resistance against cold. After trying

several hundred of the hardiest Apples of southern Maine, New Hampshire, Vermont and Massachusetts in vain, and after coming to believe that there were no iron-clads among Massachusetts Apples, it was accidentally discovered (at the Centennial, I believe) that an Apple which I had received from Canada as the Strawberry of Montreal, is really the Foundling, which originated in Groton, Massachusetts.

Now that an interest has been aroused by the partial successes already attained, hardy seedlings are being sought out and tested all along our northern borders and in Canada. Scott's Winter is one of the Apples thus obtained, and though not an Apple of high quality or large size, it is a reliable keeper and a useful fruit, not only in itself, but as a beacon of hope for the future.

As for the Pears and stone fruits, the future is pretty secure, not only from the improvement of our native species of the last, but in the importation of the highly satisfactory Russian, Siberian and north Chinese varieties. I see no reason to doubt that, by discoveries already made, the orchard region on this continent can be extended from two to three degrees of latitude northward. That this is a wonderful gain, as the result of scarcely two decades of effort, is manifest; and there is more to come, for the work is scarcely begun.

Newport, Vermont.

T. H. Hoskins.

Our Native Plums.

I HAVE made a specialty of Plums of the American and Chicasaw varieties for sixteen years, and since 1874 have never failed to have a crop of plums—even the unprecedented winters of '80 and '81, which killed the Peaches here, while buds were dormant, failed to kill the Wildgoose, Moreman, Miner, or Newman Plums. An ordinary crop is the exception; an enormous one the rule. This season on very light, sandy soil, my Wildgoose trees—twelve years planted—averaged six crates of thirty-two quarts each to the tree, which netted in Baltimore \$1.60 a crate—the price ruled lower than usual because of the immense peach crop. With such experience a little enthusiasm may be pardonable. As a point of profit, there can be no comparison between these plums and varieties of the European species. With the latter, unceasing watchfulness and warfare against insects, at a time when labor of all kinds is pressing upon fruit-growers, is the price of a crop, while with varieties of the Chicasaw or American species, one longs for a more industrious breed of curculios to help in thinning out the crop. Among the most profitable varieties with me may be named Lone Star, Mariana, Wildgoose, Indian Chief, Newman, Quaker, De Soto, Robinson, Rollingstone, Golden Beauty, Moreman, and Wayland—named in the order of ripening. The number of varieties has increased rapidly within the last five years; such only are named as have had sufficient trial on my grounds to establish their value. The trees of the American varieties are more upright and much less scraggy in growth and habit than are those of Chicasaw parentage. As a rule, success with this class of Plums is rendered much more certain by alternating varieties in planting, because the stigma and stamens mature at different times in the blossoms.

As yet there seems to be no limit to the variations in seedlings, the Wildgoose being the parent of most of the varieties now cultivated. Six or eight years before his death Charles Downing suggested to me the possibility of obtaining a free-stone Plum by crossing some of our native varieties with the Peach. Accordingly, I used the Wildgoose as the female and Troth's Early Peach the male parent in a trial to effect this end. The result was a real cross, so far as habit and appearance of the tree are concerned, but a genuine mule in point of reproductive powers; flower buds in abundance there have been, but they never expand. Since that I have approached a free-stone variety pretty closely by using pollen from the German Prune upon the Richland Plum.

In my long study of native Plums, I have never found any evidence that the Mariana is a cross between the Chicasaw and some cultivated Cherry; neither do the facts in my experience lead me to believe that this alleged origin will bear the light of investigation. One fact alone seems to invalidate this claim: Neither the Wildgoose Plum nor the common Cherry can be successfully grown from cuttings, while the Mariana strikes almost as readily as a Willow.

Denton, Maryland.

J. W. Kerr.

Orchid Notes.

Erises Rohannianum is a choice Orchid, and much superior to any other of the Suavissimum section of the genus, to which it belongs. It is one of the recent introductions of Sander's, and is still somewhat rare. The racemes are some two feet long and densely flowered. The flowers are white, tipped with purple, the side lobes of the lip being citron yellow,

and the spur spotted with purple. The value of the flowers is enhanced by their delicious fragrance. The plant is a robust grower, and is doing extremely well with us in a wood cylinder, where abundance of water can be given the roots without danger of rotting them.

Trichosma suavis deserves a place in every collection, if only for its remarkable fragrance. But the flowers are very pretty, too; creamy white, with the side lobes of the lip striped with crimson, and borne on terminal racemes. The slender terete stems are about one foot high, surmounted by two broadly lanceolate leaves. This species is a native of the Khasia hills, evidently in situation where it has abundance of water, for in cultivation it can hardly get too much if the pots are kept well drained. A mixture of sandy peat and moss is a good compost for it, and a cool house is most suitable.

Vanda Sandieriana is now in flower with us. It is a magnificent Orchid, by far the handsomest of this large genus, and fortunately is now becoming more plentiful. In habit it resembles both *V. cœrulea* and *V. suavis*. The flowers are

Autumn Flowers.—The United States should be the country par excellence for Michaelmas Daisies, but, perhaps, these pretty autumn flowers are not so much valued as in Europe. Among the numerous species and varieties of the old world, *Aster Ibericus* deserves all praise; it is a native of the Caucasus and very much resembles *A. Amellus*, but the flowers are much better in shape and outline, bright blue with a tinge of purple, all opening nearly at the same time, forming an even umbel of nearly a foot across; its height is about two feet and it flowers in September. *Colchicum speciosum*, var. *maximum*, is now very showy, its numerous, bright-purple flowers being fully five inches across. *C. autumnale albo pleno* is a gem among late-flowering bulbs; its perfectly double, well-shaped flowers appear in numbers and last at least three weeks. A clump of Snowdrops in full flower is an uncommon sight just now, yet *G. alanthus Olga Regina* has been blooming since the first of October, to be followed by *G. nivialis corcyrensis* during November and December.

Baden-Baden.

Max Leichtlin.



Fig. 78.—*Elæagnus longipes*.

borne on short, stout, axillary racemes, of a roundish outline and about four inches across. The color of the upper part is a delicate blush, while the lower is greenish-yellow streaked and suffused with crimson. The small concave lip is purplish-red. Being a native of the Philippine Isles, it requires strong heat, light and abundance of water during growth.

A close rival to the foregoing and belonging to the same section is *Vanda cœrulea*, an older kind and much more plentiful. In this plant the racemes are longer and more loosely flowered, bearing twelve to twenty flowers; in color, lavender or light blue. This is a very unusual color among Orchids, and were this plant more easily grown it would become very popular; but, unfortunately, its cultural requirements are not generally well understood, and only rarely is it seen in really good condition for any length of time. It comes from the higher regions of the Khasia hills, and therefore requires comparatively cool treatment. It should also have plenty of light, abundance of water during growth, and a very long rest without shriveling the leaves.

Kenwood, New York.

F. Goldring.

Plant Notes.

Elæagnus longipes.

MR. CHARLES WRIGHT, the botanist of the Wilkes expedition, detected this plant at Simoda in Japan more than thirty years ago, and its characters were first made known by Dr. Gray in his now famous and classical paper upon the Flora of Japan, read before the American Academy of Arts and Sciences in 1859.

Elæagnus longipes is a low shrub in cultivation, only a few feet in height, although it is said to become a small tree sometimes in Japan. The branches are unarmed or sometimes beset with spines, angular, and covered with small, rusty-brown scales. The leaves are somewhat coriaceous, oval-oblong, contracted into rather a blunt point, smooth and dark green above, and covered on the lower surface with a dense silvery white pubescence. The small

yellow flowers solitary, or more rarely two or three together, are borne on long slender peduncles. They are inconspicuous, but the fruit, which appears in our illustration upon page 499, is exceedingly ornamental. It ripens in July, and is oblong, half an inch or more long, bright red, and covered with minute white dots. This plant may well be grown for the beauty of its fruit alone, which, moreover, is juicy and edible, with a sharp, rather pungent, agreeable flavor. Both the size and the flavor can doubtless be improved by careful selection, and it is quite within the range of possibility that it may become a highly esteemed and popular dessert and culinary fruit. To some persons, even in its present state, the flavor is far preferable to that of the Currant or the Gooseberry. The plants are very productive, as our illustration shows, and they are easily raised and perfectly hardy. They possess, moreover, the merit of carrying their leaves bright and fresh well into winter.

C. S. S.

The Forest.

Forest Planting in Virginia.

AT the recent annual meeting of the Pennsylvania Forestry Association, the President, Mr. Burnet Landreth, delivered an instructive address, from which we are permitted to make the following extracts. Other portions of the address will be published in subsequent issues of this journal:

In 1870 the senior member of my firm, who had been for a long life a collector and planter of trees for ornamental purposes, till he had established a noted collection, decided to plant a forest on a large area of old farm land in eastern Virginia, on the lower Chesapeake, where we held about 5,000 acres. The annual rainfall there is forty-nine inches; the relative humidity, both during summer and winter, seventy-three; the maximum temperature, 103°, the minimum, 1°, above zero. The wind in summer, south-west; in winter, from the north.

Of this tract, about two-thirds were in original and second growth Pine, with some hard wood interspersed. He decided to plant the open farm fields, and follow upon the stump-land, as the forest was cut off. Experience had made clear to us the wonderful reproductive capacity of the soil of tide-water Virginia, in reclothing itself with the natural Pine of that region—the Loblolly, or old Field Pine. Still we thought it might be profitable to establish forests of trees, both evergreen and deciduous, not common to that section, which would promise to be more profitable than the ordinary Virginia Pine. Among native deciduous trees found there were the Chestnut, Walnut, Ash, Oak and many others, not occurring, however, in forests of one variety, but always mixed. So we concluded to try the experiment of forest-planting which, if not profitable to us, might, at least, serve as a guide to others in that portion of Virginia. Accordingly, after preparation in 1870, in 1871 we planted 100 acres with the nuts of Black Walnut, depositing the nuts at one foot apart in open furrows drawn eight feet apart. We followed this by planting eight acres with Chestnuts.

The next year, 1872, we continued planting both seed and seedlings. Of seedlings, we set out 30,000 Black Locusts, 5,000 Southern Cypress and 5,000 European Larch. These we planted in solid blocks, four feet by four apart, intending that they should prune themselves.

In 1873 we planted four bushels of Locust seed, twelve of Chestnuts and one-eighth of a bushel of Larch seed.

In 1874 we put in 150 bushels of Black Walnuts, ten of Hickory Nuts (*Carya tomentosa*), twenty-two of Chestnuts, one of European Larch, ten of Catalpa (*C. bignonioides*), three of Poplar, three of Pecan, one of White Oak, and one-eighth of a bushel of Italian Sumac. Of seedlings, we set out 2,000 eastern Catalpas, 5,000 southern Catalpas, and 75,000 Black Locusts.

In 1877 we set out 10,000 Catalpas, 1,000 White Ash, 15,000 White Pine, 1,000 Douglas Fir (*Pseudotsuga Douglasii*).

In 1879 we set out 40,000 *Catalpa speciosa*, 1,000 *C. Kamferi*, 150,000 *C. bignonioides*, 10,000 *Ailanthus*, and 3,000 Douglas Spruce.

Since the last date, 1879, we have set out a large number of Catalpas and this winter shall have 100,000 seedlings to plant.

Now, the result of all this has been much disappointment, but not despair. We were first disappointed in the Black Locust plantations. The early groves had reached a height

of twelve feet, the later ones, of course, being smaller. In the larger tracts the trunks were stocky, straight and limbless, the upper branches all interlaced, forming a solid roof, so that the midday sun seldom reached the alleys between the trees. They gave promise of a fine Locust forest, just such as we had pictured, but hardly expected to realize. But one September the Locust-tree Borer descended in swarms upon our groves, laying millions of eggs, which produced myriads of grubs, and by the next midsummer, every tree was ruined. We cut them down and pulled out the roots with oxen, the expenses of removal being twenty-five dollars per acre.

Next, the European Larch gave out in the trunk, the main stem breaking off at about twelve feet in height. This tree had never promised well, however. It thrives best upon dry, rocky soils; ours was a sand, with clay subsoil.

The Southern Cypress next failed, except in wet bottoms. Of Hickory and Pecan, the nuts planted were, to a large extent, stolen by the squirrels, woodchucks and field mice, and those that did vegetate made such slow growth that we plowed them out and replanted the ground with Catalpa. The Tulip Poplar was not a success, as the rabbits and field mice during winter ate off from the tender seedling the sweet, juicy bark, and destroyed nearly every plant. The White Oak acorns were largely stolen by animals, which also ate the bark of the young seedlings as they did that of the Poplar. The Italian Sumac, planted for its leaves, still stands, but the percentage of tannic acid in its foliage is not greater than in the leaves of the wild Virginia Sumac; and therefore its cultivation offers little hope of profit.

In short, with us, Black Locusts, Deciduous Cypress, European Larch, Hickory, Pecan, Tulip Poplar, White Oak, Osage Orange, Wild Black Cherry, *Ailanthus*, White Ash, Mulberry, and some others, have all failed.

Our successes have been principally in determining which varieties were not profitable to plant; and in this respect we have prospered famously. Our other successes, such as they are, have been achieved with four trees—Catalpa, Black Walnut, White Pine and Douglas Spruce.

Of the Catalpa we have abandoned several tracts, and, after most serious ravages by stray cows, half wild pigs, rabbits, squirrels, mice and fire, have about 200,000 trees, ranging in height from two to twenty feet, according to the period of planting. They stand in rows six feet apart, many of the rows a quarter of a mile long, and promise to make, in time, fine forest studies, if not eaten up, for the Catalpa, too, has its insect enemies. Two years ago every tree was denuded of its leaves, within a period of a month, by the ravages of the Catalpa Sphinx (*Darenma catalpa*). These have gone, but they may come again and may stay. Still, this contingency of destruction by insects unavoidably attaches to the culture of any forest tree. Of the Catalpas there are two types cultivated for forest purposes, the eastern and the western, indicated botanically as *C. bignonioides* and *C. speciosa*, the latter being the most approved.

The tree is as hardy as a Chestnut, of quick growth, the trunk and limbs, by reason of its resistance to decay, being valuable as fence-posts, gate-posts and mud-sills. I have a piece of gate-post which stood in place 100 years, and it is in a perfect state of preservation.

The timber when sawed takes a fine polish, and is handsomely marked in its cellular structure. The Catalpa has been used in the West for railroad-ties, and possibly it makes serviceable ones; by some enthusiasts it has been extolled as superior to the White Oak, but that is folly. A first-class tie must have other merits than ability to resist decay from moisture. The catalpa tie is deficient in power to resist the hammering of the rail under passing trains, and it is deficient in that adhesive power upon railroad-spikes possessed by white oak or chestnut. In oak very careful tests have proven that as much as a pull of 4,000 pounds is required to draw out a spike driven five and a half inches. In catalpa the adhesive power is not one-half of 4,000 pounds.

The second deciduous tree which we have planted in large number is the Black Walnut. In tide-water Virginia it is found wild and of noble proportions. Our seedlings, however, have grown very slowly. For the first six or seven years they grow but a little more than four inches a year, and it is only when they become very deeply rooted that they appear to start off vigorously. The lowland soils, however, are not adapted to the development of the best Walnut timber, the wood produced there being too full of silix. It will not polish as smoothly as timber grown upon a soft prairie soil. It is stronger and better suited for

the legs and rounded portions of furniture, but, as a rule, does not furnish handsome paneling. Our Walnuts, of which we have 150,000 left, after as many have been destroyed and others abandoned, do not impress us as of much value, and for the present we shall plant no more.

Our attention was directed to the White Pine as flourishing upon our particular soil by a wild settlement of these trees in the midst of one of our Yellow Pine forests. Here we found a parent tree, ninety feet high, grown probably from a seed dropped by a bird of passage, possibly from far-off Maine. It has germinated, reached maturity and developed seed, which, falling around, has in turn germinated and developed seed-bearing trees, till now the growth of several generations of trees stand in concentric circles. This natural group clearly indicates that soil and climate were hospitable to the White Pine. The results of our own plantations, in addition to this example, make it quite evident that the White Pine can be grown successfully. The principal difficulty with plantations of this tree lies in securing a stand in the first instance, as a large percentage of the seedlings die.

The Douglas Fir I consider the best of the two evergreens. It grows as rapidly as the White Pine, and if it escapes the ills of forest life and reaches maturity, it will be more valuable. One of its merits is early maturity. Its long, tapering and light trunk particularly suits it for ship-spars, while the older trees reach vast proportions and form a trunk far surpassing the White Pine of Maine. This tree for Eastern plantations should be grown from Colorado seed, as the Oregon variety is not so hardy.

I would recommend that the White Pine and the Douglas Fir be planted in alternate rows, so that in case of destruction of either variety by insect depredations or soil influences, there may be a chance for the remaining variety to reach maturity. Indeed, all plantations should be mixed for the same reason, but they must be mixed judiciously.

After eighteen years of practical forest-planting on a small scale, I conclude that for the particular region of tide-water Virginia—and I think I may venture to say as well for tide-water Delaware, Maryland and North Carolina—there are only four trees to plant; I conclude, also, that it is very questionable if it be profitable in that region to plant at all, so long as the Loblolly Pine will spring up in every field just as soon as annual cultivation ceases. How the seeds get there I cannot tell, but they will spring up in the centre of a one-hundred-acre field simultaneously with their appearance upon its tree-fringed borders.

This Pine will start without plowing, and it will grow under the most adverse circumstances. It will take care of itself in spite of wild hogs and stray cattle. Fire is its worst enemy. In twenty years it will make twenty cords of brick-yard fuel, and for every year thereafter an additional cord or more, till at forty years it will cut fifty cords of first-class wood; the only expenses being the taxes, which altogether do not equal one-half of one per cent.

Correspondence.

Horticultural Exhibitions.

To the Editor of GARDEN AND FOREST :

Sir.—Whenever I attend horticultural exhibitions in different cities, the question comes to my mind: Are they managed properly? Do we use the material to the best advantage, not only from an educational, but from a financial point of view? I have before me a number of reports of horticultural societies. Turning to the lists of standing committees, I find the names of men who have made national reputations for themselves in the learned professions, in art, in science or in various branches of business. Turning to the list of exhibitors, I find many names equally famous. In both cases they are men of refined and cultivated tastes; men who have proved their ability by their success. Again, I turn to the treasurer's report, and, without going into details, it appears, as every one knows, that the exhibitions rarely prove financially successful.

What are the causes of this failure, and what are the remedies? There are plenty of standing committees. Possibly they have been standing too long. There are plenty of good pushing men on them who are successful in their own business. Why are they not successful here?

Is it because they are held back by some of the older members who cling to "the good, old methods"? If it is a lack of money, this, I believe, could be overcome by personal subscription, if the members could show the public any advanced ideas that would be beneficial. The wealthy gentle-

men always seem very glad to do their part in contributing their specimen plants.

Allow me to suggest :

1. That the entire hall in which an exhibition is to be held be treated to a thorough cleaning.

2. That it be profusely decorated with Laurel wreaths, Laurel branches, evergreen trees and other greenery, from the entrance to the dome. In most cases I believe enough enthusiasm could be aroused among the members to contribute to this in the shape of labor, material or money.

3. That the tables, benches and staging, in every instance, be covered either with paint, moss or evergreens, instead of with bare, broken, rough and age-stained boards.

4. That in front of these tables, instead of allowing the trestles and horses to show or attempting to hide them with paper, I would suggest using some kind of cloth with eyelet holes fastened with screw-eyes, which could be used a number of years.

5. That proper vases be obtained in which to show cut flowers, and that these should be always kept clean, and particularly so if transparent.

6. That exhibitors of Grapes be requested to hang all Grapes, and that the amount of "bloom" be a strong point in judging, while those that have been carefully polished should be barred.

7. That if vegetables are to form a part of the exhibition, none but remarkable specimens be admitted.

8. That if enough social influence could be brought to bear, the first night be devoted to "Society," with lady patronesses and a banquet and bouquets for the patronesses only. I have no doubt but that the tickets or invitations could be disposed of at five dollars apiece. The day following should be open to all at fifty cents apiece. Every part of the house would have to be opened to accommodate the crowd.

9. That if "Society" could not be induced to participate (which is hardly probable, as there are so many fashionable people connected with horticultural societies), a number of influential ladies be induced to interest themselves as a Ladies' Committee.

10. That a little money be expended upon the local papers, which are always very kind, even to inferior shows. Make the exhibitions worth illustrating, and they will give you hundreds of dollars' worth of advertising.

11. That two orchestras be engaged to give promenade concerts at fixed hours and music at frequent intervals. Sometimes barely enough money is realized to pay a single band. Have enough music to pay for itself.

12. That all plants be named properly with both botanical and common names. Mark the *Peristeria elata* the Holy Ghost or Dove Plant; *Nepenthes*, the Pitcher Plant; *Platyco-rium Hilli*, the Stag-horn Fern. A little description of these flowers would attract a great deal of attention. A child can see the resemblance, and it would interest all, while heretofore they have been passed by almost unnoticed.

13. That exhibitors of cut flowers should be required to have them renewed or freshened up from time to time, and that all watering of plants should be done early.

14. That few complimentary tickets should be given out.

15. That all exhibits, and especially those of cut flowers and designs, should be judged by "points." If one plan could be adopted all over the country, judges from other states would be preferable.

16. That premiums should be liberal, and awarded with the greatest care.

17. That if at any time during the exhibition the attendance is not too large, complimentary tickets be sent to different schools interested in botany, which would prove valuable from an educational standpoint.

18. That the managing editors of the city papers should be notified of the efforts that are being made to make this the grandest display of plants and flowers ever offered by this society; that the "society" people of the city are taking a more active part than formerly, and that it is expected to be one of the social events of the season. That a committee of well-informed men be appointed to receive all reporters, not only to repay them in a slight way for their kindness, but to aid them in their work, that a technically correct report may be given of the exhibition.

19. That for a Chrysanthemum show the decoration should be most elaborate. Japanese vases, rugs, screens and lanterns would be very appropriate.

Philadelphia.

H. H. Battles.

Pinus sylvestris.

To the Editor of GARDEN AND FOREST :

Sir.—There are several specimens of the Scotch Pine upon the college campus here, and in most instances they are making a good growth. During the three seasons before the present one the trees have borne cones in abundance. This was strikingly true for 1887, and this spring the trees were conspicuously loaded with the old cones. These same trees—and there are several of them close by—this spring produced an unusually large number of staminate blossoms, but an extended search failed to reveal any pistillate clusters. We have scores of Scotch Pine trees upon our ornamental grounds, and among them all only one has been found this season bearing cones of this year's growth, and upon that there were not over a dozen. The striking contrast between the thousands upon thousands of cones of last year, and the almost total absence of them this season, has led to this note, with the hope that some dendrologist may assign the cause. Is it a case of over-bearing in 1887 and recuperation this season?

Byron D. Halsted.

Agricultural College, Ames, Ia., November 15th, 1888.

Recent Publications.

Handbuch der Forstwissenschaft, in Verbindung mit A. Buhler, R. von Dombrowski, W. Exner, H. Fürst, u. s. w., herausgegeben von Tuisko Lorey. In dreien theilen, in 8vo.; 630, 614, 576, ss. Tübingen, 1888.

Dr. Lorey, the learned professor in the University of Tübingen, has completed his work upon Forestry, which appears under the title which we have reproduced above. It occupies three stout volumes, and is rather an encyclopedia of forest science than a mere manual, in which different departments are fully treated by different specialists, among whom are found the names of some of the most distinguished professors in the German and Austrian forest schools. With them have been associated several practical forest experts in the preparation of this work, in which will be found a presentation of the different branches of science applicable to the management of the forest and of the methods of silviculture adopted in the different countries of central Europe.

The first chapter, from the pen of Professor Weber, of Munich, is devoted to forest statistics; the distribution of forests in the different European countries, and an examination of the historical causes which have developed their actual present condition. To this Dr. Weber adds an exhaustive and most interesting account of the influence of the forest upon climates, the flow of rivers and the composition of soils.

The second chapter, by Dr. Lorey, is devoted to an examination of the question of instruction in forestry in the different countries of the world, including statistical information relating to schools of forestry and forest experimental stations, with the courses of study and the organization of all such establishments.

Professor Schwappach, of Tübingen, devotes the third chapter to a history of European forests and of European silviculture, covering the period from the earliest days of modern civilization to the present time.

The fourth chapter is a treatise upon geology, mineralogy and chemistry, as applied to silviculture, from the pen of Professor Ramann, of Eberswald.

The fifth chapter is devoted by Professor Luerssen to a forest flora, in which are described the ligneous plants native of Germany, together with such herbaceous plants as are met with in the forest and all the cryptogamic plants found growing upon trees in Germany, and often the cause of serious diseases among them.

Professor Lorey, in the sixth chapter, discusses exhaustively, methods of natural and artificial forest reproduction, to which is joined a study upon the creation of nurseries.

Fürst, Director of the Forest Institute of Aschaffenburg, treats in the seventh chapter those questions which relate to the injuries inflicted upon the forest by man and by the lesser animals, including insects, by parasitic vegetation, and by the fall of meteors. A second part of this same chapter is devoted by Förster, Chief Forester at Gmunden, to a discussion upon torrents and avalanches—that is to say, upon the art of mountain restoration as it is technically known.

Professor Exner, of Vienna, examines in an exhaustive manner in the eighth chapter the properties of different woods from a purely technical point of view—their color, grain, specific gravity, odor, density and elasticity. In the ninth chapter the head forester at Hildburghausen, Stötzer, discusses the uses to which different woods and barks are applied,

methods of sale for forest products, the seasoning of timber, and of the harvesting and preservation of seeds. The second part of this chapter, by Professor Bühler, of Zurich, is devoted to a description of various forest products used in agriculture—forage, the bedding for domestic animals and manures. Professor Schuberz, of Carlsruhe, treats of the transportation of forest products; while the chemical composition of wood, its artificial preservation and the manufacture of paper-pulp, charcoal, wood-acid and resin, form the subject of a fourth division of this chapter, from the pen of Professor Schwackhofer, of Vienna.

Hunting and fishing and fish-culture occupy the ninth chapter.

Professor Lehr, of Munich, discusses in the tenth chapter capital and the formulas which must be followed in determining the relation of capital invested in forest property to its returns, relations which must be known in order that the most advantageous methods of forest management in different cases may be adopted. This is followed in the next chapter by an explanation by Professor Guttenberg, of Vienna, of the theory and practice of the measurements of the contents of timber in a forest, with tables showing the increase of different trees, both as solitary individuals and in masses.

The theory of forest management is developed by the director of the Forest Academy at Tharand, Professor Judeich, in the twelfth and most interesting chapter of the whole work, in which is explained broadly and clearly the principles upon which modern scientific forestry is based.

Professor Schwappach explains, in the thirteenth chapter, the organizations for the maintenance, in Germany, of forests belonging to the State, the Communes, and to individuals, while in the fourteenth and final chapter, Professor Lehr treats of the forest from the point of view of national defence and public wealth.

We have described at length the contents of this remarkable work, which is certainly the most comprehensive in scope and the richest in information that has yet appeared concerning the forest in its complex relations to modern society. In it are displayed very fully the actual condition of advanced knowledge in regard to the forests of Europe; and it stands as a worthy monument of the learning, industry and perseverance of the German officers who have made forest science what it is. The student of forests and forestry will find in it unlimited sources of information, but it is as an encyclopædia and not as a manual, as its title would seem to indicate, that Professor Lorey's great work must be considered, and like all encyclopædias, it loses something in the absence of unity of treatment and expression—an inevitable failing when a book is written by several authors working independently. But the book upon forestry is yet to be written, in which a master mind, having gathered all the facts which science has been accumulating during the past two centuries, exposes them in one compact, logical and well-balanced treatise.

Periodical Literature.

Attractive descriptions, profusely illustrated, of the environs of Vienna, are published in the October and November numbers of *Westermann's Monatsheften*. Vienna has grown with great rapidity during the past two decades, and the greatest intelligence has been displayed in laying out and planting the new quarters, and utilizing the possibilities which they offered for securing variety as well as beauty to the result. No finer streets exist than the encircling boulevards, laid out along the line of the old fortifications of the town, which are collectively known as the "Ringstrasse;" and in some of the suburbs villa-architecture, with all that it implies in the way of horticultural embellishment, has been brought to a very high degree of perfection.

In the *Atlantic Monthly* for October is a pleasant, poetical little pastoral in prose by Sophia Kirk called "Pasture Herb and Meadow Swath"—one of those witnesses to the development of love for nature and of the literary gift, to which we have referred more than once already as noteworthy proofs in the progress of American culture. In the "Contributor's Club," in the same magazine, is a brief but suggestive paper which enforces the fact that the more one knows the world the more pleasure it gives—that, in fact, we do not really enjoy it because we do not really even see it until we have learned for what and how to look. It is hardly needful to remind our readers that Mr. Burroughs has often preached from this important text; but too many teachers cannot join their voices with his in the effort to persuade people that the

study of natural science is far from being a dry pursuit, deadening to the æsthetic feelings—that it is, instead, a pursuit which, rightly followed, will deepen those feelings by giving them more and finer nourishment.

In the same magazine for November is an article, called "A November Chronicle," by a well-known naturalist, Mr. Bradford Torrey, which should be read by every one who fancies that summer must be really over because the almanac says it is. Who would believe, except upon evidence as good as Mr. Torrey's, that in the course of a Massachusetts November of average inclemency, seventy-three species of wild plants, representing twenty-two orders, were found in bloom? The list is given in full and is as varied as it is interesting. The great family of the *Compositæ* is most prominent with several species of Asters and Golden-rods, with Dandelions, Yarrow, Tansy, Cone-flower, Everlastings, Burdock and a number of others. But the Pea family is also well represented; the Pale Corydalis and even the Deptford Pink appear, while the Witch Hazel brings a single shrub in among the humbler plants. The places where most of the finds were made are described for the benefit of others who may wish to conduct autumn exploring expeditions, and also the relative profusion in which the various species appeared, some being very common, and others, of course, only isolated belated examples. Naturally the sea-shore proved the best hunting-ground. The list might have been increased, Mr. Torrey adds, had it been made to include garden-flowers, like the Pansy and the Larkspur, which he saw by the road-sides. But it was only of the veritable wild-flowers that he took account.

In the *Gentleman's Magazine* for November is an exhaustive, instructive and very interesting article called "Quinine and its Romance," by Mr. Alexander H. Japp. The title is not badly chosen, for the history of the Cinchona tree, as the source of one of the world's most valuable medicines, has certainly been a strange one. The precious powder was first brought to Europe in 1639 by the Countess of Chinchon, wife of a viceroy of Peru. Her name is, of course, the origin of the botanical name by which the great genus is now known, while quinine is derived from the native Peruvian term *quina*, and "Jesuit's bark" was long a familiar appellation, for the reason that the drug was long procured through the hands of Jesuit missionaries. It was a full century after the drug was known before the tree itself was discovered by a European—by Jussieu, in 1739. And then all the specimens which Jussieu sent home having perished, it was another century before growing trees were seen on European soil. These were specimens of *Cinchona Calisaya* grown in the Jardin des Plantes, at Paris, from seeds sent home in 1846 by Dr. Weddell. Attempts to cultivate Cinchona trees were made in 1852, in the Botanical Garden of Calcutta, but were unsuccessful, and the Indian government therefore sent the well-known botanist, Clement Markham, to South America in 1860, to seek for seeds of the various species and learn how they might best be grown. The history of the wanderings of Markham and his companions is one of the most interesting chapters in the history of botanical explorations. The many species of Cinchona trees are confined to the tropical regions of the Andes range, between about nineteen degrees south latitude and ten degrees north latitude, where they grow on the mountain slopes and in wild ravines, and their discovery was attended with the greatest hardships and dangers. But it is impossible here to do more than indicate the contents of Mr. Japp's paper, which, besides much historical information, gives, also, an account of the methods now employed in India, in growing Cinchona trees, in gathering the crop of bark and in preparing it for market.

A recent number of *Petermann's Mitteilungen* contains an interesting account by Baron Eggers, the well known explorer of the botany of St. Thomas, of a journey into the interior of San Domingo, illustrated by a large map of the districts traversed, from Puerto Plata on the northern coast southward to Santiago and La Vegas, and thence over the mountain-range south-eastward to Pico de Valle and south-westward to Maydama. Although the first part of the journey was along the chief route of communication between the seaport and the interior, the roads are so bad as to be passable only for pack-horses even in the drier seasons, while in the rainy winter all communication is often suspended for weeks together.

The first Pines which he saw were at a height of 590 feet above the sea level, and on the crest of the El Puerto range, at a height of 1,700 feet, they formed a magnificent forest

almost unmixed with other trees. The species is the same as that which occurs in Cuba—*Pinus occidentalis*: it extends up the slopes of the Sierra del Cibao to the summit—about 7,750 feet. Its range in altitude is, therefore, unusually great, although it seems to reach its greatest development at a height of about 4,600 feet. It is more particular, however, in regard to soil than climate, flourishing only where coarse chalk and red loam mingle in the subsoil. When these conditions are changed, the Pine disappears and deciduous trees take its place. As the undergrowth consists only of sparse shrubs, low-growing Ferns and Grasses, progress in the high mountain districts was found less difficult than in most other unexplored tropical regions. The chief obstruction came from frightfully heavy and prolonged thunder storms. In Jarabacoa, a village of 800 inhabitants, the church and the houses are built of small planks of *Oreodoxa oleracea* and thatched with the leaves of the same Palm. The inhabitants are chiefly occupied with Tobacco culture. In this neighborhood Baron Eggers found the so-called Nogal-tree (*Juglans Jamaicensis*). Further south and up to about 3,100 feet elevation the Pine woods contained a thick growth of *Davillia aculeata*, while the Manacle Palm (*Euterpe*) looked strangely side by side with Pines, and Bromeliads, with brilliant red leaves, grew upon the stems of the Conifers. In high districts, where the *Oreodoxa* does not grow, the houses are built of *Euterpe* planks and thatched with grass, no attempt being made to use the excellent wood of the Pines. The summits near Pico del Valle are covered in greater part with grass growing in thick bushy clumps, scattered through which are numberless small stones and some large rocks. Here and there are low thickets formed of shrub-like *Compositæ*, *Ericacæ* and of *Garrya Foyeni*, while between the rocks grows a yellow-flowered species of *Scrophularicæ*, a half-creeping *Andromeda*, and a multitude of plants which recall northern climates, such as *Hieracium*, *Alchemilla*, *Galium*, *Chimaphila*, *Pteris*, and, along the brooks, *Ranunculacæ* and *Carex*. On the flints which are strewn about here and there, a small-leaved *Loranthus* with rosy flowers is conspicuous.

Few other botanical details are given in Baron Eggers' paper, which is rather a geographical than a botanical treatise. Nevertheless, it will interest all who care to learn about the general aspect and the local peculiarities of a little known country.

Recent Plant Portraits.

CÆSALPINIA JAPONICA, *Gardeners' Chronicle*, November 3d; a Japanese shrub, with yellow flowers, introduced by the Messrs. Veitch, and interesting as the only representative of a generally tropical genus, likely to be hardy in northern gardens.

ENKANTHUS HIMALAICUS, *Revue Horticole*, November 16th; a representative of a small genus of plants of the Heath family, closely allied to *Andromeda*, and peculiar to the Himalaya, southern China and Japan.

The figure is from a plant which is described as hardy in the neighborhood of Paris, and which had been received from Japan, two facts which suggest the Japanese *E. Japonicus*, rather than *E. Himalaicus*, which is found in the hot and humid valleys of the Sikkim Himalaya.

ANGRÆCUM SANDERIANUM, *Revue Horticole*, November 16th; one of the most graceful and attractive of the small-flowered species of this genus, and a native of Madagascar.

TOXICOPHLEA SPECTABILIS, *Revue Horticole*, November 16th; fruit.

VOCHYSIA GUATEMALENSIS, *Botanical Gazette*, xiii., t. 23.

PITCAIRNIA TUERCKHEIMEI, *Botanical Gazette*, xiii., t. 24.

CROCOSMA AUREA, var. MACULATA, *Gardeners' Chronicle*, November 17th; a variety of a well-known plant, with orange-colored flowers, the segments of the perianth marked with a purple-red spot, and declared "to be the finest form of the variable *Crococma aurea* that has yet appeared." "It grows to a height of three to four feet, and single stems cut with their graceful leaves and placed in water, for in-door decoration, open their buds for weeks in succession."

MAXILLARIA FUSCATA, *Gardeners' Chronicle*, November 17th.

EUCALYPTUS VIMINALIS, *Gardeners' Chronicle*, November 24th; from a specimen grown on the Island of Arran, which has grown from the seed to a height of thirty feet since 1872.

CALANDRINIA OPPOSITIFOLIA, *Gardeners' Chronicle*, November 24th; a native of the coast mountains of northern California.

PINUS PINEA, *Gardeners' Chronicle*, November 24th; a portrait of the old species of the well known Italian Stone or Parasol Pine of Italy in Kew Gardens.

Notes.

During the year which ended on April 1st, 1888, the Government nurseries of Berlin distributed 105,778 young trees and shrubs, to be used in adorning the city and its suburbs, and 82,686 flowering and foliage plants. The nurseries which supply plants for the use of the city now contain nearly 4,000,000 specimens and are steadily being enlarged.

At a meeting of the New York Academy of Science held on December 3d, at Columbia College, Dr. H. N. Jarchow read a paper on the training of foresters in Europe, and the economic success that has been attained in forest culture there, and Professor E. B. Southwick, Secretary of the New York State Forestry Association, gave a brief history of what had been accomplished by that body.

Among the interesting plants detected by the Abbé Delavey in Yun-nan, and recently sent to France, there is a Fig (*Ficus Ti-Koua*), with edible fruits of the size and color of a Lady Apple, according to the *Revue Horticole*, which grow and ripen under ground. The plant is a shrub, with trailing, semi-subterranean branches, and large obovate-elliptical leaves. The Figs are called by the Chinese who eat them *Ti-Koua* or earth gourd.

A collector recently sent out by Dr. Dieck, a well-known German nurseryman and dendrologist, reports that the Rose hitherto sold in Europe as the true source of attar, and called "Rose de Kazanlik," is not to be found in the vicinity of Kazanlik at all. The true Roses for the production of attar, he says, are *Rosa alba suaveolens* and a variety of *Rosa Gallica*. Specimens of these plants he has been enabled to send to Germany, in spite of the strict laws which now prevail in the Danubian provinces against the exportation of attar-producing Roses.

It is well known that the slopes of Krakatoa, in the Strait of Sunda, and the regions around its base, were wholly desolated a few years ago by a terrible volcanic eruption, which covered them so deeply that all seeds as well as vegetable growths were destroyed. Almost immediately, however, it is said, Nature began to repair her ravages in a way that most interestingly illustrates her processes in early geological epochs. Fresh water Algæ soon covered the wide stretches of cinders and pumice-stone, forming a glutinous layer in which seeds could take root; and a couple of years after the eruption Ferns and Phanerogams had everywhere established themselves, the species being similar to those which take possession of newly formed coral islands.

An important horticultural exhibition will be held next year in Berlin, and will be open to all nations. The schedule of prizes contains 235 classes of stove or warm house-plants, 377 classes of green-house and hardy plants, besides classes for fruits, vegetables, nursery stock, tools and machines used in horticulture; and there will be a section in which the classes include the morphology, anatomy and growth of plants; physiology, useful and poisonous fungi; officinal and economic plants, plant geography, etc. The exhibition is expected to bring out the close relations which exist between architecture and horticulture. Visitors to Berlin, moreover, will have an opportunity to examine some of the finest examples of landscape gardening which can be seen now in Europe.

The attendance at the annual meeting of the American Forestry Congress, held at Atlanta last week, was unusually large, and the papers read and the discussions of topics presented were of the most instructive character. The officers elected for the year were: President, Governor J. A. Beaver, Pennsylvania; Vice-Presidents, H. G. Joly, Quebec; J. D. W. French, Boston; Charles Mohr, Mobile; Herbert Welsh, Philadelphia; George H. Parsons, Denver; Recording Secretary, N. H. Egleston, Washington; Treasurer, Charles C. Burney, Philadelphia. Mr. B. E. Fernow, Chief of the Forestry Division of the Department of Agriculture, was compelled to decline the office of Corresponding Secretary, which he has most acceptably filled since the organization of the Congress, and J. B. Harrison, of New Hampshire, was chosen as his successor.

Mr. Meehan tells the readers of the *Country Gentleman* that in an old Indian village of Alaska, the people used to carve their genealogies on huge poles before their doors, by means of hieroglyphics. One generation cut its crow or its bear, or whatever the tribal style may be, on it; and so on, one above another, generation by generation, to the top. They do not do it now, but the moss-grown and neglected old poles, some two feet thick and perhaps twenty feet high, are still standing. On the tops of these poles, Hemlock and Spruce trees

have sprouted and grown; great bushy trees, ten or fifteen feet high, and as handsome as any seen in a nursery. In some cases the roots have gone down through the old poles, twenty feet or more, to the ground, splitting the poles open and exposing the roots, which perhaps will be, when the old poles rot away, real trunks to support the trees.

It is said that American competition has greatly interfered of late years with the resin industry of the districts of the Gironde in France, at one time the chief support of a large portion of the inhabitants. About a third part of the land in the department once consisted of barren sandy wastes called *Landes* upon which nothing but Pines would grow. *Pinus maritima* was planted in large quantities, and despite the recent falling off of the trade in resin, it still affords many sources of revenue, the most important of which is the furnishing of pit-props for use in the English mining districts. One hundred and seventy-five thousand tons of these props are annually exported. Young trees are also sent to England in large quantities to be employed in paper making; railway sleepers and telegraph poles are supplied for many parts of France, and an illuminating oil is made from the resin, which readily finds local buyers, as it burns well, is even cheaper than kerosene, and, moreover, is non-explosive.

According to a correspondent of *The American Architect and Building News*, seven crops of forage are annually gathered from the plains of Lombardy. The district is naturally well watered, the great reservoir of the Alps being near at hand and a number of rivers traversing it on their way towards the Po. But a natural supply of water would not suffice, during the long, hot summer of Italy, to preserve the plain in such a phenomenal state of fertility. A vast expenditure of labor and skill has for ages been devoted to works of irrigation. At least as early as the twelfth century they were well under way, under the direction of the monks in a branch house of the monastery of Clairvaux, which had been established by St. Bernard near Milan. During Renaissance times they were carried on by some of the greatest architects of Italy, Leonardo da Vinci, for example, having conceived the idea of connecting the Mincio and the Tessina by means of a canal. And to-day the whole plain is a net-work of canals and reservoirs which cannot be exhausted by the fiercest drought.

Among recent devices for preserving timber is that advocated by Filsinger, who recommends impregnating the wood with a weak solution of aluminium chloride. Another suggestion is, that a solution of gutta-percha, obtained by a mixture of two-thirds gutta-percha and one-third paraffine heated together until the gum melts, shall be forced into the cells of timber from which the air has been previously exhausted. The gutta-percha, as it cools, hardens and completely fills the cells. But the latest suggestion is that of Von Berkel, who proposes first to impregnate wood with a saturated solution of lime water or milk of lime. The board is then dried and placed in a vacuum cylinder and impregnated with a mixture of silicic acid and mineral oil or some other fatty or bituminous substance, by pressure applied for a considerable time, when a process of petrification takes place and a kind of asphalt rock is formed within the wood cells. The industrial value of this invention has not been demonstrated yet, although the possibility of using water gas for these purposes, of which Von Berkel's plan appears to be only a modification, has long been recognized.

There seems to be no end in England to the making of horticultural societies. The attention which the English give to minor branches of the art is shown by the flourishing existence of a National Auricula Society and a National Carnation and Picotee Society, both of which hold well-attended annual meetings and large exhibitions. Speaking of the Auricula, *The Garden* recently quoted from a book published in 1764 to prove that even at this time this flower was high in public favor. Indeed, the author of the book in question said of the Auricula that it was "formerly the pride of English gardeners and florists," whose success in raising new seedling varieties greatly excited the envy of their Dutch rivals. But there could have been nothing to complain of in his own time, for he declared that he had known good new seedling Auriculas to sell for seventy guineas apiece. As *The Garden* remarks, "When we consider the value of money in those days as compared with the present, this does seem an enormous sum, for there could have been no gambling with so perishable a plant as there was with the Tulip in the days of the Tulip mania in Holland." A single guinea is now considered a very high price for a new Auricula in England.

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Forests and Civilization.

THE essential facts, principles and ideas of the subject of Forestry have not yet become a part of the mental possessions of the people of this country. It takes time for any new subject to obtain a real place in the mind and consciousness of a nation. Just and practical thinking in regard to our forest interests and their relation to the national welfare is possible only after a considerable acquaintance with the facts upon which the science and practice of Forestry depend. Some degree of familiarity with the subject is necessary to enable people to recognize its real nature and importance. Opinions which have no basis of knowledge are of slight value—are, indeed, hardly worthy of the name; and some knowledge of elementary facts and principles must be domesticated—made at home—in the minds of the people, in order to prepare them for intelligent action regarding our forest interests.

We have not yet reached this stage in the development of our national intelligence in relation to this subject, and much iteration and illustration of the truths which have been established by observation and by the experience of thousands of years, will be required before they become a part of the national consciousness; before these truths can be assimilated and incorporated into the mind and habitual thought of the American people. This indispensable repetition of the essential facts and ideas of the subject must be urged, and an impression produced, as rapidly as possible, as the process of the destruction of our forests does not wait for the necessarily slow advance of popular intelligence.

All the money that has been obtained from the Adirondack forests might have been gained without injury to the woods themselves, leaving every acre still clothed with prosperous and productive forests. But, by reason of ignorance, indifference and mismanagement, much of this region is to-day almost as completely and irrecoverably ruined as if it were covered a thousand feet deep with boiling lava. The people who are interested in great schemes and enterprises for irrigation in the western part of this country appear to be mostly unaware of the essen-

tial fact that if the forests of that region are destroyed, there will be a great loss of the water needed to carry out any plan or system whatever.

When the pine supply of Wisconsin and Minnesota is exhausted there is likely to be a very considerable movement of the population out of the states which have depended upon this region for lumber. Other sources of supply will be too far away, and the increased cost of timber will make the difference, for many thousands of people, between being able and not being able to live in that country. If the people thus evicted by irresistible economic conditions should all go out at once, the spectacle would be impressive and dramatic. But, as the movement will take place gradually, few persons will give it attention or recognize its cause. Yet the results in the end must be the same.

The ultimate and inevitable effect of the destruction of our forests will be the impoverishment of some regions of our country; and, as a consequence of this wanton and hideous waste of our national resources, millions of our people will be compelled to live on a lower plane of civilization, and with less means for physical subsistence and comfort, and for development in all that constitutes civilized life, than would have been accessible to them if our forests had been intelligently cared for. There is no subject which at present more urgently requires the attention of journalists, educators and statesmen, and of all thoughtful men in this country.

Christmas Green.

EVERY morning for a week past the steamboat Minnie Cornell, from Keyport, New Jersey, has come to her pier loaded with "rope" and "fancy green." "Rope" is the trade name for the cables made of Club-moss and occasionally of Hemlock spray, and used for looping into festoons or twining about columns in Christmas decorations. "Fancy green" includes the wreaths, stars and other designs, manufactured chiefly from the leaves of Holly, Laurel and Rhododendron, together with Mosses, green or gray, from Oak trunks and Cedar boughs, scarlet berries of the Black Alder, the bluish gray fruit of the Juniper, the scarlet and orange fruits of the Bittersweet, not to speak of Grasses dried and dyed in fearful and wonderful colors. The little steamer has more than once carried 60,000 yards of the festooning material, and 1,500 dozen stars and wreaths at a single trip, and the entire amount of "rope" brought to this market during the season would reach from New York to Boston. The very first Christmas green sold in this city came from Keyport. Some forty-five years ago the wife of a Monmouth County farmer gathered enough Ground Pine to fill a sheet with the four corners tied together, and shipped it on a sloop with her poultry. It proved a lucky venture, and ever since, the people of Monmouth County have held almost a monopoly of the industry, although both the species of Club-moss most largely used, *Lycopodium dendroideum* and *L. complanatum*, were practically exterminated from that region years ago. They are still abundant, however, in Connecticut, some parts of northern New York, and Massachusetts, and are shipped to New Jersey in such quantities that large dealers buy them by the ton, and the manufacture of these festal wreaths and cables gives employment to the wives and daughters of many farmers after the fall work on the farm is over.

The trade in Christmas-trees began in 1851, when Mark Carr yoked up his oxen and hauled from the Catskills to the steamboat landing on the Hudson two sled-loads of young Balsams, and paid a silver dollar for the privilege of selling them on the corner of Vesey and Greenwich Streets. At least 150,000 trees have been piled up along the docks of the North River during the last week, and since the days of Mark Carr many a dealer has been glad to pay a hundred dollars for a corner privilege for holiday trade in Christmas trees. About half of the trees this year come from

Maine, the remainder from the Berkshire Hills, the Black River country in the Adirondacks, and the Catskills. Good trees in the Catskills are becoming scarce, however, and the woodsmen of those mountains are looking elsewhere for their material. Short jointed, stocky trees with perfect whorls of branches at the base of each annual growth, are the most sought for, and the Maine trees, as a rule, command rather higher prices than any others. The trees come up thickly where hard-wood timber has been cleared away, and if they are cut above the second or third joint, one of the limbs soon turns upward and becomes a leader to furnish another Christmas-tree. In this way the same land is cut over several times. Fortunately the Balsam Fir is about as nearly worthless for any other purpose as any of our native trees, and therefore the waste of cutting so much young timber is not serious. A few Black Spruces come among the Firs, and Hemlock boughs, which, oddly enough, are made to do duty as Palm branches in some church services, are in growing demand every year. Trees from Maine are shipped as far south as Baltimore; and of late years large quantities of Holly branches, mostly from Maryland, since the limited supply in New Jersey is nearly exhausted, are sent as far north as Boston. Within two or three years the Mistletoe has been sold here in a few shops and even on the streets, but in spite of its association with Christmas festivities in Old World traditions, it has filled but a small place here in the regular market of Christmas green. And yet this parasite is common on the Gum trees of southern New Jersey, and it is never so beautiful as at this season with its transparent berries clustered among its evergreen leaves.

The plan for the Leland Stanford, Jr., University, printed upon another page of this issue, records something more than the ideas of the acknowledged master of landscape art with regard to a great problem. It records the occurrence in our country of new and vast problems which spring from the wonderful development of commerce and the concentration of enormous wealth in the hands of individuals often willing to use it for the public good. And it records that the time has passed, or is fast passing, when great projects, more or less rural in their character, are to be undertaken blindly or without the counsel of trained specialists. The fact that an artist is called upon to locate the building and model the grounds of a University, to cut up to the best advantage the grounds of a suburban land company, or to suggest the proper approaches to a rural railroad-station, shows that the American people have made noteworthy progress during the last few years in artistic and economic education.

The value of a thoroughly studied plan, such as Mr. Stanford has secured, can be appreciated only by comparing it with the plans of some of the old Universities of this country, which have been built up piecemeal, without reference to any consistent scheme of general utility or convenience, and just as individual fancy or momentary convenience dictated. An examination of Mr. Olmsted's plan must show how convenience, to say nothing of appearance, is lost, and how economy of time and space is sacrificed, whenever a scheme of this nature is undertaken without the aid of a carefully-prepared plan.

The United States is now taking the lead among nations in the revival of the art of landscape-gardening, once almost lost from the face of the earth, and is adapting it to the solution of some of the greatest economic problems in modern life. The movement is still young, yet it shows itself more or less distinctly in every public improvement recently undertaken in this country, and still more unmistakably in the growing interest and appreciation of the American people for all that is good, and, therefore, beautiful, in Art applied to Nature.

A horticultural and technical college has lately been opened at Swanley, near London, under the auspices of the National Fruit-growers' League, an association formed for

the purpose of encouraging the general growth of fruit in Great Britain, as a remedy for agricultural depression. Immense quantities of imported fruit, especially apples, are consumed in Great Britain, and many persons claim that all this fruit, and a great deal more, can be better grown at home than anywhere else, and the land which cannot be used profitably in growing wheat can be made to pay large returns if covered with orchards, and that fruit-growing will give employment to many persons now idle. The trouble with English agriculture is too deep to be cured or even greatly mended through apple-growing; but there is no reason why the new college may not prove a useful institution. In it, we are told, "work for the mind will accompany work for the body, and thus the physical and mental faculties will be equally developed;" and, having settled the somewhat momentous question of "what shall we do with our boys?" it is going, so its founders promise, to provide for the future of the young women of England. The working of the new school will be watched, therefore, with interest and anxiety by the heads of large families.

The wood used in the manufacture of spools is an item of no small importance already in the forest-crop of some of the Northern States; and the demand for it is increasing rapidly. The wood of the Canoe Birch is used almost exclusively for this purpose, although the Gray Birch is used also in small quantities. Maine, and especially Piscataquis County, is now the headquarters of the spool-wood industry; and a large number of vessels loaded with spool-wood have sailed direct, during the summer, from Bangor to foreign ports. The wood for this purpose must be clear and entirely free of knots and other imperfections; it is sawed into squares, of different dimensions, four feet long, which are delivered to the spool-makers tied into bundles. Several million feet of Birch timber—probably twelve or fifteen—are cut annually in the Maine forests alone for this purpose. The amount of Canoe Birch lumber standing in our northern forests is still large, and as the trees grow rapidly up to a certain age, the supply will not be exhausted soon, although the consumption is now increasing much more rapidly than it ever has before.

The Story of Shortia.

OUR illustration upon page 509 represents one of the rarest and most interesting plants of North America. It is interesting from the peculiar structure of its delicate flowers, its botanical relationship, and the geographical distribution of the small family to which it belongs, which, as now defined, consists of but half a dozen genera and only nine species, which are all, excepting the two species of *Diapensia*, confined to eastern North America and eastern Asia.

The great interest of our *Shortia*, however, is found in the history of this plant during the past century, and in the fact that among all the plants studied and described and classified by Asa Gray, this little herb most excited his interest. American botanists never think of the man whom they all delight to look upon as their master and to remember as their friend without thinking, too, of this humble little plant, which properly occupied a conspicuous place upon the gift which a few years before his death they brought to him with words of affection and encouragement.

Professor Gray was in Europe in 1839, and in examining the herbarium of the elder Michaux, preserved in the Museum at Paris, found an unnamed specimen of a plant, with the habit of *Pyrola* and the foliage of *Galax*, of which only the leaves and a single fruit were preserved, and which had been collected, the label stated, in the "*Hautes montagnes de Caroline*." This specimen at once arrested his attention; and after his return, two years later, from his first botanical journey into the Carolina mountains, where he had searched in vain for Michaux's plant, he ventured to describe it, and to point out its probable affinities upon the strength of the scanty material in the Michaux herbarium, dedicating it to Dr. C. W. Short, the author of a catalogue of the plants of Kentucky, and fifty years ago an astute observer and capital collector of western plants, which he distributed with an unstinted hand among the principal herbaria of the United States and Europe.

Nothing more was seen of *Shortia* for a long time, although no botanist ever visited the mountains of Carolina (and the number after 1866 was considerable), without carrying a special commission from Cambridge to bring back a specimen of Michaux's little plant, in which Dr. Gray's interest became stronger than ever when, in studying in 1858 a collection of Maximowicz's Japanese plants, he recognized in that botanist's *Scizocodon uniflorus* another species of *Shortia* almost identical with the Carolina plant. The Japanese specimens, curiously enough, were in the same condition—that is, although the calyx and pistil of the flower were preserved, there was no trace of either corolla or stamens.

These specimens, while they confirmed the validity of the genus, threw no light upon the Carolina plant, which botanists now hunted for more assiduously than ever. The keenest-eyed plant-hunters looked for it in vain year after year in all the region in which Michaux was supposed to have traveled; and the search was almost given up as hopeless, when in May, 1877, *Shortia* was found accidentally by a youth, G. M. Hyams, upon the banks of the Catawba River, near the town of Marion, in McDowell County, North Carolina, at a considerable distance from the high mountains to which Michaux's label assigned the plant. The new specimen fell into the hands of the young man's father, a professed herbalist. His knowledge of botany, however, was not great; and it was not until the following year that he discovered, with the aid of a correspondent, what a treasure he had.

These new specimens made when the plant was in flower confirmed at once Professor Gray's original ideas of the proper relationship of his genus, and enabled him to complete its characters and remodel the family to which it belonged.*

There seemed to be nothing more left to say about *Shortia*. It was figured and described and discussed, and even introduced sparingly into cultivation, although its stay in gardens was a short one; while the enterprising discoverer reaped a rich harvest during a year or two by selling plants (and, it is to be feared, by exterminating them) for herbarium specimens, at extravagant prices. Professor Gray, however, clung to the belief that Michaux's label could be depended upon, and that the real home of *Shortia* was in the high mountains. He regarded the station upon the Catawba as an outlying post, to which he suggested the plant might have been washed down, and still believed that it was to be found about the head-waters of the streams flowing eastward from the high Black Mountain range. This region was again carefully examined, but without result, and the search for *Shortia* was practically abandoned.

There is still, however, another short chapter to relate in the history of this little plant. I visited, two years ago, in the autumn of 1886, the mountain region of North and South Carolina, which lies about the head-waters of the Keowee River, the great eastern fork of the Savannah, for the purpose of gaining, if possible, some insight into the origin of *Magnolia cordata*, a species which was first described in Michaux's North American Flora, but had not been seen anywhere growing wild during the present century, although preserved and generally disseminated in gardens. Michaux left Augusta, Georgia, towards the end of November, 1788, for the purpose of securing a supply of roots of what he called at that time *Magnolia cordata*. This was not, as I was afterwards able to show,† the *Magnolia cordata* of the Flora, founded long afterwards in Paris by Richard upon a specimen of *M. acuminata*, but the *M. Fraseri*, a species which had been discovered a few years earlier by the younger Bartram, the first botanist who explored the Carolina mountains. Michaux, in spite of a serious attack of fever, reached the head-waters of the Keowee on the 9th of December, and although weakened by sickness and hunger, and seriously impeded by the intense cold which he encountered in this elevated region, proceeded to explore the neighboring high mountains in search of a supply of young *Magnolia* trees for his Charleston nurseries. On the day of his arrival he noted in his journal that he had discovered what he called a "*Nouvel Arbuste a. f. dentelés rampant sur la Montagne.*" I had taken occasion before undertaking this journey to examine the manuscript diary kept by Michaux during his stay in America, preserved in the library of the American Philosophical Society; and I had noted the directions he had written down with much detail for finding his "*Arbuste*"—which evidently had interested him, as it is the only plant which he mentioned in

the whole diary in this way—in the hope of identifying his plant, which, as this region had not been visited again by any botanist, might prove something new, or at least imperfectly known. The idea that the plant might be *Shortia* was hardly entertained. It did not seem possible that Michaux, under any circumstances, could have mistaken *Shortia* for a shrub; and Dr. Gray, who had examined the diary either just before or immediately after his first journey to Carolina, if he noticed this entry at all, certainly never associated it in any way with the plant which he wanted to find more than all others. Had he done so he would have visited, or sent some of his correspondents to visit, the head-waters of the Savannah, a region which, for some reason, never attracted his attention, although it was by this route, following the old Indian trail from the coast to the Cherokee country, that all the early botanists penetrated to the mountains.

It was possible, with the aid of the journal, to find, without much trouble, the spot where Michaux had camped in December, 1788, and to trace his footsteps upon the different excursions which he made into the mountains from this camp. The two torrents which he described, as descending in a rough and tumultuous course from the high mountains to form the Keowee, are now known as the Toxoway and the Horse-pasture. The little fertile plain which Michaux found at the junction of these two streams still exists, as does the foot-path, since trodden by the feet of many moonshiners, which led from the right bank of the river a hundred paces below the junction of the two streams into the mountain facing the north. It was by the side of this path that Michaux, just 100 years ago this month, discovered his "*Arbuste*," with denticulate leaves, and here, ninety-eight years later, I found *Shortia*.

The evidence seems conclusive that the two plants are one and the same, or, if it was not in this exact locality that Michaux gathered the specimen preserved in the Paris Museum, it was in this immediate neighborhood, where *Shortia* is now known through the subsequent explorations of Mr. F. H. Boynton, of Highlands, North Carolina, to be abundant.

Mr. Faxon's drawing shows so clearly the habit and structure of *Shortia*, which, moreover, has been frequently described in purely technical journals of botany, that nothing further upon these subjects need be written now. Its nearest American allies are *Galax aphylla*, a beautiful evergreen herb, with tall, erect racemes of small pure white flowers, peculiar to the wooded slopes of the southern Alleghany Mountains, and the familiar *Pixie (Pixidantha barbata)* of the New Jersey Pine barrens. There is in Japan one species of *Shortia* (*S. uniflora*), and possibly two, as there exists a rude portrait in an old work upon Japanese botany, in which what is evidently another species of *Shortia*, almost identical with the American plant, is represented. In Japan, too, are two species of the nearly related *Schizocodon*, while in Thibet occurs *Berneuxia*, of the same family of *Diapensiaceæ*, of which the type is *Diapensia*, with two species, one widely distributed in boreal regions and the other confined to the Himalayas.

C. S. S.

Plan of the Leland Stanford, Jr., University.

SENATOR STANFORD, of California, when he determined to commemorate the short life of his only son by erecting a university in his memory, had the practical good sense to call to his assistance an artist trained by long years of experience in dealing with large questions of rural and urban improvement. The answer to the problem which was given to Mr. Olmsted to solve is found in the plan, a part of which is printed upon page 508 of this issue of GARDEN AND FOREST. The problem was an interesting and remarkable one. No one before, it is safe to say, has deliberately set about building a great university, with a university town and all the appliances thought necessary for a modern education, in a situation remote from any great centre of population. Mr. Olmsted, therefore, has had to deal with questions which are quite unlike those found in his own experience, and for which there are no precedents in the work of other landscape gardeners.

The ground which he has studied with reference to this plan embraces about 7,000 acres, the map here presented covering an area of about one mile in length by half a mile in width. It is situated in the San José valley, about thirty miles from San Francisco, overlooking the head of the Bay of San Francisco, and not far from Menlo Park, the suburban or country-home of several prominent Californians. It occupies the rolling slopes of the low hills of one of the interior Coast Ranges. The heights extending above and towards the left

*Asa Gray in *American Journal of Science*, 3 ser. xvi., 483; *Annales Sci. Nat.*, 6 ser. vii., 171, t. 15.

†*American Journal of Science*, 3 ser. xxxii., 1160.

of the portion shown in the plan are covered with the remnants of what was once a fine forest of Firs and Pines and Redwoods, and over the lower ground are scattered widely the noble Oaks which give to the scenery of the California valleys the peculiar park-like aspect which distinguishes them from those of the rest of the United States.

Mr. Olmsted's plan embraces, in addition to the immediate surroundings of the University, the site for an arboretum, in which it is proposed to gather the arboreal vegetation of California and of other regions of the world with climates similar to that of California, and an artificially planted forest of several hundred acres, which will serve as a model to

coast range and is mainly rugged and semi-mountainous. . . . The remainder is a plain, with a moderate inclination to the north-east. . . . The central buildings of the University are to stand in the midst of the plain. . . . This has been determined by the founders chiefly in order that no topographical difficulties need ever stand in the way of setting other buildings as they may, in the future, one after another, be found desirable, in eligible, orderly and symmetrical relation and connection with those earlier provided.

This point being fixed, the leading purpose of so much of the plan as is represented in the sketch is: First—to provide for convenient and economical use, by large numbers, of the means of research and instruction to be offered in the central buildings. Second—to provide, in the arrangements devised for this purpose, an outward character, suitable to the climate of the locality, that will serve to foster the growth of refined, but simple and inexpensive, tastes. Third—to favor the formation, in connection with the University, of a community, instructively representative of attractive and wholesome conditions of social and domestic life.

The four sides of the central quadrangle are to be formed by a continuous arcade of stone, eighteen feet in height, twenty feet in depth and 1,700 feet in length. Opening from the arcade are to be a series of structures for class-rooms, lecture-rooms, draughting-rooms and rooms for scientific investigation and instruction. Each of these is to be one high and airy story, and in all desirable cases to be provided with special arrangements for light and ventilation above as well as on its four sides. . . . Of several reasons for limiting these structures to one story, the principal is, that in a building of two or more stories the necessity of providing on the lower for any cross partitions, or for the support of any considerable weight in the superstructures, has everywhere in older institutions been found to stand in the way of desirable revisions of interior plans. It is considered that anything thus likely to hinder the ready adoption in the future of new inventions or methods and conveniences for liberal education should be avoided. . . . The areas assigned to the second and third quadrangles (B and C), are to be used as University Athletic Grounds until wanted to be built upon. When taken to be built upon, the next blocks of the reservation (D, E) are to be substituted as Athletic Grounds, and so on. Those parts of the reservation not in use as thus proposed, are to be fields of the Agricultural Department of the University.

The public streets are to have borders ten feet in breadth, planted with shade trees. These borders are to be graded and planted at once, and all land within the limits of the plan not to be presently occupied for some one of the purposes above stated, is, as soon as practicable, to be closely planted. The plantations are to be afterwards thinned before they become crowded, and clearings are to be made among them, as, from time to time, space is wanted for buildings. Building sites not expected to be very soon occupied by buildings are also intended to be inclosed with hedges. By these two expedients it is hoped that the immediate surroundings of the University may be prevented from taking on at any point the usual aspect of "vacant lots" in the outskirts of towns and villages, which, in California, because of its dry summer climate, is apt to be even more forlorn than in the Eastern States.

That part of the public way, divided by a strip of garden ground, upon which the Library and the Museum buildings (J, J) face, is to be carried upon a retaining wall with a parapet, making it a terrace. The five compartments immediately to the northward, below the terrace, are to be depressed areas, each occupied by a mass of shrubbery, over which a broad view of the principal buildings of the University will be had from the head of the avenue (Q). These areas would be fields of turf were it not that satisfactory turf in California can be maintained only by profuse irrigation, and irrigated ground, unless kept with extreme neatness, is liable to be a source of miasmatic exhalations. It is considered that the University should not have the difficulty and expense imposed upon it of the constant mowing, rolling, sweeping and watering of such large open spaces as would thus be made necessary. In this and in all other respects, the landscape and the architectural design have in view ideals that pertain rather to the south than to the north of Europe or to the Atlantic States.

This work will be studied with profound interest by landscape gardeners, and its gradual development will be watched with interest by all persons interested in the spread of education and in the growth of American civilization.

It may be added that substantial progress has already been made in the construction of the university buildings from plans prepared by Messrs. Shepley, Rutan and Coolidge, of Boston.

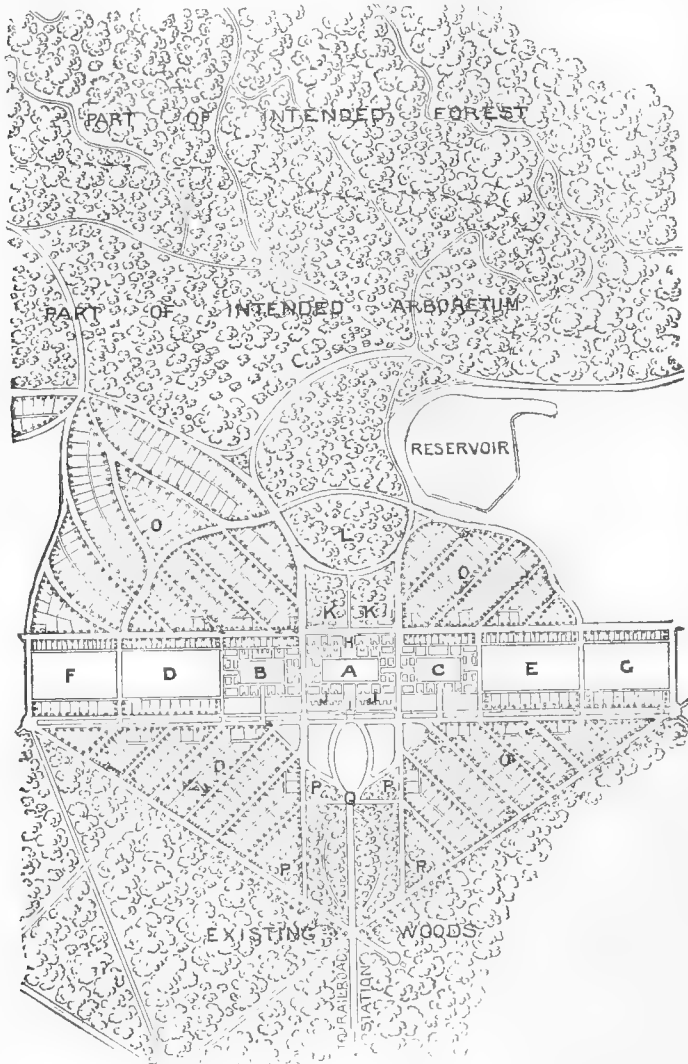


Fig. 79.—Plan of the Leland Stanford, Jr. University.

A: The central quadrangle, with buildings now partly under construction. **BC:** Sites for adjoining quadrangles, with proposed buildings. **DEFG:** Four blocks of land of form and extent corresponding to the above, to be held in reserve as sites for additional quadrangles and proposed buildings. **H:** Site for University Church. **I:** Site for Memorial Arch. **J:** Sites for University Libraries and Museums. **K:** Site for buildings of Industrial Department of the University, now partly under construction. **L:** Site for University Botanic Garden. **OOOO:** Four districts laid out in building lots suitable for detached dwellings and domestic gardens, with public ways giving direct communication between them and the University central buildings. **PPPP:** Sites for a Kinder Garten, a Primary School, an Advanced School and a School of Industry and Physical Training. **QR:** A direct Avenue between the central quadrangle and a proposed station of the Southern Pacific Railroad, with bordering groves and promenades. Space is allowed in the wheel way for a double track street railway.

planters on the Pacific coast. It is needless, of course, at this time to call attention to the importance of this particular part of Mr. Olmsted's comprehensive scheme, or to urge the necessity for establishing an Arboretum and Botanic Garden in California, where all the climatic conditions are so unlike those of the rest of the Continent, that they may be made to play an important part in extending the sum of human knowledge with regard to the trees and plants of the world.

The leading motives of the scheme are briefly summarized by Mr. Olmsted as follows:

The ground covered by the upper portion of the sketch, and extending some miles beyond, is a part of the foothills of the

Foreign Correspondence.

London Letter.

THE attempt to induce English farmers to plant their fields with Tobacco instead of Wheat and Potatoes having proved abortive, efforts are being made to induce colonial farmers to try Tobacco for the English market. A prize is offered by the London Chamber of Commerce for the best specimen of colonial-grown Tobacco, of not less than 400 pounds. Without protection, however, it is not clear how the present supply can be superseded by what must obviously be an inferior article.

Begonias pay in England better than Tobacco, and I hear

flowers, which are open together. The individual blooms, male and female, attain the size of three inches or more in diameter, and are composed of six to eight large, oval petals, which give them the shape of *Anemone fulgens* or of *A. Japonica*. A nearly complete range of colors, from pure white to scarlet, with various shades of pink and carmine, is to be found in this new race, which produces a beautiful display of bloom at a season when the tuberous Begonias are over—that is, in November." The most marked character in this new race is the number of petals in the flowers, the common ones having four only in the male flowers and six in the females; the increased number in M. Lemoine's latest success is owing to the eight-petaled character of one of the parents, *B. octopetala*.



Fig. 80.—*Shortia galacifolia*.—See page 506.
 1. A plant of the natural size. 2. Corolla laid open, showing the stamens and staminodes. 3. Diagram of the flower.
 4. A stamen. 5. Pistil. 6. Vertical section of the ovary. 7. A fruit. 8. Cross-section of a fruit. 9. A seed.—All enlarged.

we have still another race of these plants to add to those which have become universally popular for out-door bedding and green-house decoration. Mons. V. Lemoine, of Nancy, already famous as the raiser of some first-rate Gladioli, Pelargoniums, etc., has succeeded in crossing the very distinct species, *B. octopetala*, with some of the finest of the tuberous section. He writes to Dr. Masters: "The result of this cross is a magnificent one, and the new race, '*Octopetala Lemoinea*,' is one of the handsomest which I have ever raised. The root is somewhat irregularly lengthened, black, intermediate in shape between that of the two parents. The stem is herbaceous and short, so that the leaves seem to be radical; they are broad, undulated, of a glossy green, with round, hairy stalks. Each plant bears from six to eight erect flower-stalks, thick and hairy, about two feet high, and each supporting from five to seven

Mr. Rivers, of Sawbridgeworth, famous for first-rate work among fruit-trees, the raiser of some of our finest Peaches, Nectarines, Plums, etc., and the pioneer of house-cultivation for orchard-trees, has gathered a very fine collection of Oranges, Citrons, Lemons, etc., which he cultivates by the thousand, and fruits when only two or three feet high. Altogether he has over fifty distinct kinds, which are true to name and comprise all the very best commercial sorts. I saw them a few days ago, and was especially charmed with the show-house of well-fruited plants, none in pots above eight-inch size, and some with over a score of large, beautiful fruits upon them. I was surprised to find that these pot-grown Oranges were better in flavor and much more juicy than those imported. Mr. Rivers supplies the colonies and also America with plants from his nursery, which, being grafted and carefully named, are much more reliable than



Fig. 81.—The Washington Oak at Fishkill—See page 511.

those raised from seeds. Indeed, these plants, except the species, are no more likely to reproduce themselves from seeds than Apples or Plums are. For the decoration of conservatories and houses in winter these small plants are of considerable value. They are grafted on the Lemon when young, grown in sunny, intermediate houses, and when the fruits appear the plants are kept in a temperature never lower than 60°. The high, regular temperature induces the formation of pulp, and prevents that abnormal

thickness and unevenness of rind which is invariable in fruits ripened in an ordinary green-house.

The charming little Daffodil known as *Narcissus monophyllus*, or the White Hoop-Petticoat, is the first to develop its pure white blooms, and they remain fresh on the plants for several weeks. It is grown at Kew for the decoration of the cool green-house. The bulbs are planted in a sandy, peat soil, which is kept moist while the plants are in leaf and flower, but quite dry when these are over. All through the

summer the pots containing the bulbs are exposed to full sunshine on a dry shelf. This is the secret of growing and flowering the White Hoop-Petticoat.

Mr. Moore, of the Glasnevin Botanic Gardens, near Dublin, has added another to the half dozen or so excellent kinds of *Eucharis* already in cultivation. The new one is a very distinct variety of *E. Amazonica* (*E. grandiflora* of botanists), characterized by the purity of its flowers, those of the type having a green tinge on the inside of the tube; there is also a difference in the form of the three inner segments of the perianth. The foliage is much shorter and thicker in texture in the new one than in the type. Mr. Baker has named the variety *Mooreana*. We have now, in addition to the two mentioned, *E. Sanderi*, *E. Mastersi*, *E. candida* and *E. subdentata*, all of them large-flowered and of great value on account of the freedom with which their flowers are produced under ordinary treatment, it being by no means unusual for these plants to flower three or four times in the same year. The once dreaded mite, which is often found on the bulbs of these plants, has proved much less deadly than it was supposed to be; at all events, one rarely sees bulbs which are unaffected by it, and hosts of other bulbs besides *Eucharis* are just as much subject to it. A famous Dutch bulb-grower, on being asked if the mite did him harm, replied that it had been on his bulbs ever since he knew them, which was more than forty years, but it did no harm. If a bulb sickened the mite increased, but strong bulbs were unaffected by it. So far as my experience goes, this is true.

Cypripedium insigne Sanderæ is the last sensational Orchid, a small plant, with a single growth and one flower, having brought seventy guineas at an auction sale on the 16th inst. It differs from the type in being devoid of spots, the pouch and petals being yellow and wax-like, the dorsal sepal yellow below and white above. It was imported among a batch of *C. insigne* by Mr. Sander.

Two of the best Orchids flowering here now are *Lalia autumnalis*, with its variety *atrorubens*, and *L. anceps* in all its numerous forms. These two species are Orchids for the million, as they are easily grown, they are permanent stayers when once established, and they flower freely every autumn, lasting about six weeks in perfection.

November 23d, 1888.

W. Watson.

The Washington Oak at Fishkill.

ALL strangers who visit Cambridge, in Massachusetts, look with interest upon the remnants of the venerable Elm tree under which Washington sat when, on the 3d of July, 1775, he assumed command of the Colonial Army. Not less interesting from its association with the General of the American Army, although much less well known, is the Oak which is represented in our illustration upon page 510.

Washington's headquarters remained on the west bank of the Hudson, between Newburgh and New Windsor, from the spring of 1782 to August 18th, 1783; and during this time he crossed the river frequently for the purpose of visiting the troops in camp upon Fishkill Plain, near the village of that name. The most convenient landing-place on the east bank was upon a long, low point of land formed to the north of the mouth of Fishkill Creek, known as "*Presqu'île*," and here, according to the tradition of the locality, under two large Oak trees, Washington always mounted and dismounted from his horse as he started and returned from the camp.

One of these trees appears in our illustration; its companion was blown to the ground on the 10th of August, 1881. The story of Washington's connection with these two Oaks seems to be abundantly substantiated. The Commander-in-Chief was often accompanied on these excursions from his headquarters to the camp at Fishkill by his Adjutant-General, William Denning, whose son, also William Denning, at that time fourteen years of age, was sometimes allowed to join the party. The impressions made upon the boy by the incidents of this period were not effaced; and many years later, in 1822, after a life of travel and adventure, he returned to the Hudson and purchased from a member of the Verplank family the point of land, and the old Oaks, still associated in his mind with the Commander-in-chief of the American Army and the first President of the United States. The daughter of the second William Denning, to whom we are indebted for these facts, still inhabits the old mansion built on "*Presqu'île*" in 1813; and her life and that of her father span the years which separate us from the days of Washington and the Colonial Army.

The tree is a Chestnut Oak (*Quercus Prinus* of botanists), still healthy and vigorous, and standing directly at the top of the low

river-bank. The trunk girths, at the present time, twenty-one feet, and, judging from the age of its companion, which was blown down seven years ago, eight or ten centuries may have passed since the acorn from which it sprang fell to the ground.

Our illustration is from one of a series of photographs of the old trees and the historical country places of the Hudson River, made by Mrs. Winthrop Sargent. The photograph brings out admirably the striking character of the bark of this particular species of Chestnut Oak. It is dark brown, and, on old trees, very thick and deeply furrowed, with broad, rounded ridges; while on all other American White Oaks (that is, Oaks which have the lobes of the leaves rounded without the slender bristles found on the leaves of the Black Oaks, and whose acorns ripen in one season), the bark is thin, light-colored, or, on some species, almost white, not furrowed, but separating into thin, flaky plates or scales.

Cultural Department.

New Chrysanthemums.

THE published lists of Chrysanthemums in recent years have contained the names of so many new varieties that the experience of any grower who has tried, so far as possible, all the new kinds, may be of some interest to those who are wise enough to limit their collections of this plant to the well-tested varieties. It has been possible for me, up to the present time, in a garden of moderate size, to try all the new foreign varieties and the larger part of those raised in this country. But the steadily diminishing number of really good novelties, and the pleasant lottery of raising seedlings, have convinced me that a more rigorous selection than that hitherto practiced must be henceforth made.

Lemoine, of Nancy, who publishes a list of the most desirable new varieties of Continental origin, gives the names of sixty-eight Chrysanthemums new in 1887. Cannell's list for the same year numbers fifty-seven; and the various American growers add at least fifty names to these.

Of the fifty-three Continental varieties of 1887, which I have tried, coming from such successful growers as Délaux, Lassali, Etienne Lacroix, Audiguier, De Reydellet and others, four only seem worth growing again; not that the rest are all bad, far from it, but they are either unsatisfactory in growth or not sufficiently distinct from existing kinds. The four selected are: (1) Lord Mayor (Délaux), styled in the introducer's description a large-flowered variety; the plant is of moderate size and a most profuse bearer of well-shaped, recurved, full flowers of white color, suffused with rose-violet. (2) Alcyon (Lacroix), a Japanese variety, with large flowers, the broad petals being rose-carmine, striped with white, and the centre of the petals a rose color. This variety is quite distinct from existing kinds, and is, moreover, of vigorous growth. (3) Louis Wicille (Audiguier) is a very early flowering Japanese kind, of good growth, well covered with large mauve-violet flowers, with a lighter centre. (4) Superbe flore (Lacroix), Japanese, appears to me the best recent introduction of its sort. It has very much of the habit of that always good variety, M. Délaux. The rose-carmine, globular flowers are borne on stiff, erect stems, and are somewhat lighter toward the centre; the petals are twisted, and white on the reverse side. It comes into flower early and remains fresh for many weeks.

Charles Delmas (Lassali), sent out as a large-flowered variety, is very like Robert Walcott in form and color, but does not appear to me equal to the latter. Mr. Cannell sent out in 1887 some varieties imported from Japan. Of these, Edwin Molyneux, Mr. H. Cannell and Mrs. H. Cannell are well worth growing. The first has broad petals, partially incurved, of the Mrs. Wheeler type—rich brown inside and yellow on the outside; the second, in the way of the well-known old variety, Grandiflorum, is of a rich, deep yellow; Mrs. Cannell is of rather dwarf growth, and has large, pure white, incurved petals. Ralph Brocklebank, a golden sport from the old variety, Meg Merrilies, has proved a very successful prize-winner in the English shows of this year, but did not do well with me. Avalanche, a pure white Japanese variety, also a great success this year in England, I have not grown and have not seen.

A number of importations in recent years direct from Japan has given our American growers an advantage which has been quickly improved. The new varieties are very distinct from those previously in cultivation, and their influence is already noticeable in a number of seedlings well worth preserving. Of an importation of Japanese Chrysanthemums, which flowered for the first time in this country in 1884, Mrs.

C. H. Wheeler, Hon. G. Welsh, H. Waterer, Gloriosum, Bicolor and Lord Byron may be especially noted, and are all worth growing.

The most remarkable Japanese collection sent to this country is undoubtedly that made by a Japanese named Neesima, for some time resident here, who, on his return home, sent to Mrs. Alpheus Hardy, of Boston, a small collection of Chrysanthemums. Among them was the now celebrated plant named Mrs. A. Hardy, which has created so much excitement at the flower shows of the past season. While to my mind this is cer-

larly good. No plant of 1887 has made so satisfactory an impression upon me, in my own houses, as Spaulding's John Thorpe, a Japanese flower of large size, rich, deep lake in color. Marvel, sent out by H. Waterer, a white Japanese with large violet blotch in the centre, is distinct and good. Mrs. Carnegie and Mrs. Morton, exhibited for the first time this year, are both striking and promising varieties, but should have another year's trial before they can be considered as fairly entitled to the positions now claimed for them.

Cambridge, Mass., December 4th, 1888.

H. P. Walcott.



Fig. 82.—Chrysanthemum, Lilian B. Bird.

tainly not the most beautiful Chrysanthemum in existence, it is probably the most valuable addition made in recent years to this class of plants. It is apparently of vigorous growth, a character sadly lacking in Mrs. Wheeler, Bicolor and others of this class, and should become the parent of many striking novelties. Some other flowers from plants belonging to Neesima's collection are also very good. The plants now in possession of E. Dykes & Son have not been themselves exhibited this season, but flowers from them have been shown, and these have been especially commended, and deservedly so. W. H. Lincoln, large yellow; Lilian B. Bird, large, full quilled pink flower; Kioto, large incurved yellow, are all particu-

Japanese Chrysanthemum, Lilian B. Bird.

THIS variety, an illustration of which, from a photograph, appears above, was received from Japan with the now famous Mrs. Alpheus Hardy. It is a flower of the largest size, with a full, high centre when at its best. Although it resembles somewhat in form the old Glorie Rayonnante in color, it is very distinct, being throughout of that clear and soft shade of pink commonly called "shrimp pink," a tint quite new to the Chrysanthemum. The florets are all tubular, or quilled, long and slender, with the ends scarcely expanded and slightly curved inward. The unique color,

large size and vigorous habit make this one of the most valuable of recent introduction.

Arthur H. Fewkes.

Newton Highlands, Mass.

The Vegetable Garden.

GLOBE ARTICHOKEs.—All gardeners know what uncertain plants these are. If one-fourth of those covered up in the fall are alive in the spring we should not complain, for these can be lifted and divided into as many pieces as there are well-rooted divisions, and all will be good flowering plants in summer. They will come in too early, however, for October flowers. For fall flowers seed should be sown now and the plants grown in the green-houses till next spring. There is no need of hurrying them, but if sown early and grown on moderately, they will be sure to flower next fall. If sown in spring and fed liberally, they often flower nicely in September and October, but this was not the case last summer, which was so cool and moist that few spring raised plants bloomed in the fall.

CELERIAC, OR TURNIP-ROOTED CELERY.—Although catalogued and sold by every seedsman, this vegetable is not often grown for use in private families, but it is grown in considerable quantity by the market-gardeners around New York and may be found in abundance just now in our city markets. The leaves are useless, the Turnip-like root being the edible part. Peeled and sliced they are used for flavoring soups and salads. The flavor is pronounced and agreeable, better than that of the self-blanching leaf Celeries and as strong as the red Celeries. It is very easily grown. The seed should be sown in April or May, the seedlings pricked off in June, and planted out in July or August in rich ground in rows fifteen to eighteen inches apart. It is often a disappointing crop, however, from a failure of the roots to reach a good size. Stored in moist sand, the roots may be kept in a cool cellar and in good condition for use all winter long.

SPINACH.—As soon as the ground is frozen hard a little hay, straw or thatch may be scattered over this crop to protect it from sunshine, sudden freezing and thawing and heaving up by freezing; but until the ground is frozen two or three inches deep, mulch should not be used on account of the field mice. Good Spinach can now be cut from cold-frames, if it was sown early in September, and if a light cover of thatch has been strewn over frames in hard, frosty weather. For an abundant crop, the Viroflay or Long Standing is preferable, but the market growers on Long Island grow the Savoy-leaved. Where a little protection can be given in winter, these varieties are as good as any other, but where grown in the open air, and without any protection, the prickly seeded is the best variety, as it is the hardiest.

UPLAND CRESS (*Barbarea*).—A good deal has been written about this plant as a culinary vegetable for the past two years, its use being urged as a salad and as a substitute for Spinach. After a fair trial, we do not find it any improvement upon the other vegetables we have and can grow easily enough. But as it is one of the easiest of all vegetables to grow, and forms large bunches of green leaves that remain in succulent condition all summer long, and as it does not run to flower the first year, it may serve a good purpose as a dry weather vegetable, or in localities where it is difficult to grow Spinach, Lettuces or Water Cress in summer. Nothing in our garden is as fresh and green to-day as a row of this Cress, and it was sown last April.

BRUSSELS SPROUTS.—These were never better than they are this year. Not only are the Sprouts abundant all along the stems, but they are close, solid, heavy and perfectly free from aphides. Generally they are so much infested with insects that many of them are not worth gathering, no matter how well they have grown. It may have been the copious and frequent rains during the fall months that have given us immunity from this pest. Of two sowings, one made May 23d, another June 26th, of Tall French and Dwarf Improved, both have done well, but with a slight advantage in favor of the May sowing. Brussels Sprouts are moderately hardy, but it is well to have them under cover before December. Deep frames, a cellar or a warm shed are good places for them. About the end of October I erected a temporary shelter for Chrysanthemums on the south side of a shed, using some spare sashes; on the 1st of December, as the flowers were about gone, the plants were cut down and removed and Brussels Sprouts planted in their place. In storing them in a place like this all the large leaves that grow on the stems should be stripped off, also the larger ones that grow around the top. When this is done the plants can be stored close together without danger of rotting.

Wm. Falconer.

Glen Cove, N. Y., Dec. 7th.

Rose Notes.

NIPHETOS.—Well grown flowers of this admirable variety are still sought for, and, under favorable conditions, it continues to rank as a useful and quite profitable Rose, though in many instances it has been supplanted by The Bride. Niphetos has been found to do very well on side benches, where the space above is somewhat limited, as its habit of growth is rather more spreading than upright. In fact, many of the flowering shoots are inclined to be pendent, the weight of the bud being too great for the slender shoots to support without bending.

The latter condition is rather a disadvantage at times, and may be corrected, in a measure, by budding this variety on some stronger growing plant. Excellent results have been obtained in some cases by using the Lamarque as a stock, the plants so treated having produced large crops of good buds for eight or ten years in succession. But where this system is adopted, and for such a length of time as that mentioned, the plants will naturally need more space than is afforded by the ordinary side bench. If grown on its own roots, it should be remembered that Niphetos is not a very strong rooting variety, and, therefore, is easily overwatered, and when once in that condition, it needs a long time to recover.

LA FRANCE.—This pioneer among the Hybrid Tea Roses has attained great popularity of late years as a valuable variety for all seasons of the year, its pleasing color and delightful fragrance being fully appreciated by the flower-loving public. It is also an excellent Rose for growing in pots, and has given a good return for the space occupied. The plants for this purpose should be struck in February or March and grown on until the autumn, when a short rest should be given to them, when they may be flowered during the following February. Much finer flowers are produced by this variety if the shoots are allowed to remain upright, and it is therefore best for it to be grown in such a situation as to render tying down unnecessary. Experience has shown that the flowers of La France should be allowed to develop almost completely before being cut, as the outer petals will often spread out to their full extent long before the centre ones are ready to open. If cut in that condition they frequently fail to open satisfactorily afterwards, and half their beauty is lost. This Rose is too often condemned, merely on account of the grower's impatience.

COMTESSE DE FRIGNEUSE.—This yellow Tea, of recent introduction, for which great things were promised, has thus far failed to realize, at least for commercial purposes, the expectations of those who have tested it. The color is pretty and it has a pleasant fragrance, but the flowers have but little size, and the plant itself is not very strong in growth, and thus it is found lacking in two very essential points. The glittering descriptions of new Roses, and the unqualified assertions as to their value made by some of their introducers before any adequate test of their merits has been made, must eventually prove an injury to this line of business. The notable failures of the past few years, such as Her Majesty, Princess Beatrice, and, with a majority of growers, Puritan also, has brought about a much more conservative temper on the part of the large Rose growers, and in future it is highly probable that many of them will test new varieties by the dozen instead of by the hundred. Experience with novelties in Roses has proved very costly in some cases.

W. H. Taplin.

Holmesburg, Pa.

Orchid Notes.

Cypripedium Spicerianum.—In the collection of Mr. De Witt Smith, of Lee, Mass., over 190 flowers of this handsome Lady-slipper Orchid are fully expanded, having dorsal sepals and lips of unusual size. Only within this last four years has this species been seen in quantity. Before that time it was exceedingly rare, having been introduced about the year 1878 by Mr. Spicer, of England, a great lover of this genus, in whose honor the plant was afterwards named. It is a free grower, enjoys a warm and moist position in the Cattleya-house, and should be placed in a compost of good turfy loam, peat and fresh sphagnum, ample drainage being very necessary. All the Cypripediums in this collection are well worth a visit to see, as they are perhaps the best grown in this country, and bid fair to equal any that are grown in Europe. Every plant is potted in sphagnum moss only; not a particle of peat or soil of any description is used. Mr. Norman, the gardener, is not satisfied with the holes put in the pots by the manufacturer, but manages by a skillful knock with a hammer to enlarge them to nearly twice their size. The visitor

can hardly help asking whether Mr. Norman does not use some liquid fertilizer, but that he denies emphatically.

Cymbidium Mastersi album.—Mr. John Wallace, of Paterson, New Jersey, has a plant in bloom in his collection of this somewhat rare variety. The flowers are born on a pendent stem having sepals, petals and lips of the purest white, the latter having a yellow crest, the purple spots as seen in the ordinary form being entirely absent. This plant inhabits the lower parts of the Khasia Hills, and luxuriates on old clumps of trees where from time to time decayed vegetable matter has collected. A Cattleya house temperature suits it admirably, and it enjoys a compost of decayed leaves, fibrous loam and an abundant supply of moisture while making its growth. During its period of rest it should be kept dry and somewhat cooler. Several plants of the chaste and scarce *Odontoglossum Harreanum* are flowering in this collection. This Orchid is sometimes called a yellow *O. Rossi*, but it is a supposed natural hybrid between *O. Rossi* and *O. cordatum*. Some of the flowers are of great size, and on one stout spike here the flowers were three and one-half inches across, with markings of a very rich color.

Jersey City.

A. D.

Correspondence.

Improvement of North American Fruits.

To the Editor of GARDEN AND FOREST:

Sir.—We have cultivated for several years the wild Papaw (*Asimina triloba*), and it bears fruit regularly here every season. The fruit is delicious, and to my taste the best of the wild indigenous fruits of North America. Unfortunately, however, it contains too many seeds; these are large, and the amount of edible pulp is too small, therefore, in proportion to the size of the fruit, to make it really valuable. The Papaw, however, has not been improved by cultivation, and when it is remembered how the fruit-trees of Europe have been altered by long cultivation, and particularly by raising seedlings of good varieties, and by selection, I cannot help thinking that the same results may be secured by operating in this way with the Papaw. The result to be obtained is the establishment of a variety with a large amount of pulp in the fruit, and, if possible, without seeds. Such varieties are already known among grapes, pears, Japanese persimmons, oranges, bananas, etc. This improvement, if it can be effected, will make the Papaw a fruit of great commercial value, and it seems to be the duty of American pomologists and horticulturists to experiment in this direction. It would be necessary in the first place to select among the wild Papaws the varieties that seem to come nearest to the ideal standard, to grow seedlings from them, and then to select those seedlings which show the most improvement in the desired direction. If the experiments are continued long enough the ideal fruit will be developed, and then can be perpetuated by grafts. It will need, of course, some time to arrive at any result, but I am convinced that in three or four generations real progress can be made.

The Loquat (*Eriobotrya Japonica*) is now very well known in the south of France, but the variety which we grow is by no means the best. A Japanese agriculturist who has lately visited the Villa Thuret told me that a variety of Loquat exists in Japan with fruit three or four times as large as the one which we have. This variety, moreover, has only one seed, and not three or four, as in the common varieties. The size and number of its seeds is the only reason why the Loquat has remained such a third or fourth rate fruit, inferior even to the Medlar and Sorb (*Sorbus domestica*).

It surprises me that the *Sabal Palmetto*, which ought to be one of the hardiest Palms, has not, up to the present time, succeeded in the south of France or anywhere in southern Europe. Why? What is the influence in air or soil which prevents it from growing as well as many Palms do here?

The year 1888 has been the most abnormal known in Europe since the beginning of the century, and there has been no summer heat even in Algiers. The temperature in Provence has been three degrees centigrade lower than the average; and the result is that many exotics have not flowered this year, or have flowered so late that they will not perfect their fruit; and there are many failures with garden and field crops due to this lack of heat.

Charles Naudin.

Villa Thuret, Antibes, November, 1888.

[There are a few American fruits, as Monsieur Naudin points out in the case of the Papaw, capable probably or very great improvement. The Persimmon (*Diospyros Virginiana*), as well as the Papaw, is one of them, the fruit when fully ripe being considered by many persons, even now, delicious. It varies a great deal in quality, the fruit

from the extreme south being much less austere than that produced in the Middle States. It is sometimes entirely destitute of seeds, and of course these seedless varieties are the most valuable; and there seems to be no reason why the American Persimmon cannot in time be made to equal the Japanese varieties in size and flavor. There is no reason, too, why the American Chestnut cannot be as much altered and improved in time as the European variety has been; and the improvement of Hickory nuts, especially pecans, offers an excellent field for the American pomologist; nuts of all the Hickories show a great tendency to variability in size, shape and thickness of walls, but no special efforts have yet been made to take advantage of these variations with the idea of developing superior nuts. Sooner or later, however, this will be done. Pomologists have already shown what can be accomplished with our common eastern American plums, by intelligent selection and cross-fertilization, but no attempt, we believe, has yet been made to improve the common Plum of the Sierras, *Prunus subcordata*, a native of northern California and Oregon. The fruit is of very fair quality, although, of course, capable of improvement by the selection of seedling varieties. The Beach Plum, too (*P. maritima*), found upon the shores of the northern Atlantic seaboard, is another plant to which pomologists might, perhaps, direct attention with the hope of obtaining satisfactory results. A correspondent in Oregon calls attention to the size and beauty of a native Gooseberry (*Ribes Lobbii*), and suggests that it might, with a little care in selection, be developed into a valuable dessert fruit.—Ed.]

Recent Publications.

The Eulogy of Richard Jefferies. By Walter Besant. London: Chatto & Windus. 1888.

To those who love Nature and Nature's lovers, who have a sense for that mastery in the use of words which means high literary art, and who rejoice when one literary artist is commemorated by another, this life of Jefferies may well seem the most interesting book of the day. It would be too much to claim for Mr. Besant that he is an artist in words to the same degree, or even in the same sense, as Richard Jefferies was; but an artist he is, and he has never turned his talent to better account than he has in writing of the brother-in-arms whom he here commemorates. His book is a little pearl among biographies, and it will be a jewel of price indeed if it wins for Jefferies a wider place than he has hitherto held in the affections of the American public. Even in his own land he has had a somewhat limited, though enthusiastic, circle of admirers, but here his circle has been smaller still—because, perhaps, here he has had more rivals to compete with. Thoreau's name is the best which can be cited to explain—or rather, to suggest—the character of his writings; and Thoreau's followers have been more numerous in America than in England. Such articles as Jefferies wrote stood almost alone in English periodical literature; but on this side of the ocean work similar in kind (we do not speak of quality just now) comes steadily from a score of pens—work inspired by a keen love for all the minor as well as major beauties of Nature, instinct with true and delicate appreciation, and cast in a personal and artistic mould.

Richard Jefferies came of good yeoman stock, and was born in 1848 at Coate Farm, not far from Swindon, in Wiltshire. He was a studious boy, yet loved books scarcely so well as the great Book of Nature, lived much out-of-doors, and was taught by his father to use his eyes upon all he saw. A literary career early appealed to him, and at the age of eighteen he embarked in journalism, in connection with a Swindon paper, and almost at once began the writing of books as well. A pathetic time then ensued, when his novels went the round of London publishing houses, to come repeatedly back, as he said, "like the stone of Sisyphus." The first mark he made in the world was when, in 1872, he wrote a letter to the London *Times* on the condition of the agricultural laborer. This attracted great attention, was followed by three or four others, and Jefferies saw himself recognized as the chief authority in England on the agricultural questions of the day. But even then he did not realize that his true path was opening before him. For several years he still preferred to write novels of "high life" and adventure—things about which he knew nothing, rather than articles on country scenes and country people—

things about which no one knew so much as he. The novels were failures, however, while the articles succeeded, so he was gradually driven, we may almost say, to the work for which he had been born. Then for a number of years he was a constant contributor to various periodicals, and as fast as his essays accumulated they were republished in book form. Among his best known volumes are "The Game-keeper at Home," "The Amateur Poacher," "Wild Life in a Southern County," "Round about a Great Estate," "Nature Near London," "The Open Air" and "Hodge and His Masters." About seven years ago his health began to fail and was never restored before his death in 1887. During the greater part of this time he suffered incredibly, worn with want of nourishment and sleep, racked with perpetual terrible pain, and coming often under the surgeon's knife; tortured with poverty, too, wild with a longing for the out-door life he could no longer lead, eager to write but unable to hold a pen, external needs and internal cravings for expression tormenting the vigorous mind while the body was alive only in the sense of suffering. Yet during this time some of his most beautiful work was done—dictated bit by bit as his pain and feebleness allowed. One of his last essays was "An English Deer Park," recently published in the *Century Magazine*.

It is hard to explain the quality of Jefferies' work to those who do not know it. He kept a note-book, like Thoreau, from day to day, and if we may judge by the few extracts Mr. Besant gives, he seems therein Thoreau's inferior. The accuracy, the minute delicacy of observation, is the same, but the record is briefer and drier, and we miss Thoreau's poetical, philosophical tone. But in the essays which he published he stands on the same height as Thoreau in point of literary power—or, to many eyes, perhaps, on a still loftier height. His style is a marvel of ease, clearness, variety and charm, and as personal as a style well could be. It has certain oddities—as, for instance, the dropping out of the verb from time to time—which, with a weaker writer, we might resent. But everything Jefferies does seems right as he does it, for whatever it may be, it never means a lapse from graphic distinctness, from personal charm and grace and force. Then the human element, which is lacking with Thoreau, is very prominent with him—it is men in nature that he paints, not nature merely, or the soul of the single man who is gazing upon her. Very little definite instruction is to be gathered from his pages. He was even less a man of science than Thoreau, and nothing could be more naïve than his way of showing that he never thought of going to the most substantial sources of information for that knowledge of natural things which he earnestly desired to get. A "botanist friend," or a good book of colored pictures—these were the aids he sought, and while acknowledging their insufficiency, he felt no impulse to turn to the science of botany itself. And he never tries to tell us, as John Burroughs does, of all the lovely, interesting things we may find in this spot or in that. He simply records his impressions, now in the way of the most exquisite pictures of certain visible objects, and now in the way of thoughtful rhapsodies which are, perhaps, the finest things of their kind in the language—at once the sanest and the most ethereal, the most poetical and the most human. Sometimes his poetizing instincts lead him into work which can scarcely be called descriptive in any of its parts; sometimes an innate artistic instinct shows with curious distinctness, as when he refers to that method of painting which we call "impressionistic," which is so generally misunderstood and condemned by laymen, but which he felt to be true, in certain ways, above all other methods; and sometimes he is the social reformer, the prophet of the poor and suffering, the sympathetic man forgetting the beauty of inanimate nature, almost, in the sight of how men may struggle and perish on her bosom. The greatest charm of his work lies in its perpetual variety—but this fact makes it all the more impossible for us to do it justice within our narrow limits. It should be enough, however, to point our readers to Mr. Besant's biography. We can trust this to lead them straightway to Jefferies himself as his books explain him, showing us a man to admire and love, as well as a writer to enjoy and an interpreter of nature with a very personal and vital message on his lips.

Periodical Literature.

Scribner's Magazine for December appropriately opens with a beautiful article called "Winter in the Adirondacks," by Mr. H. W. Mabie. The text is pleasant reading, and shows true appreciation of the charms of winter landscape as well as of winter life in the wilderness. But the illustrations are of more exceptional value. Those from photographs are well

chosen and admirably executed; yet still better, because as true in their way and possessing the added charm of personal human feeling, are those from drawings by various artists. All are similar, of course, in theme; but this fact only makes their essential contrast more interesting. Six painters have seen the same themes under the same conditions; each has painted truthfully, but each gives us a different effect, because each has put a bit of himself into the result—has felt what he saw in a different way, and has clearly expressed his feeling. The picture by Mr. Crane, which was chosen for the frontispiece, is good, yet perhaps the least good of the six, while the charming "impression" by Mr. Twachtman, if not the very best, is at all events the most individual and charming. A single artist might have portrayed the aspect of the woods in winter as faithfully as it is portrayed in this article; but no one artist by himself could so thoroughly have portrayed their spirit, illustrated all their moods and meanings, and very certainly no camera could.

The fact that even the midwinter numbers of our great magazines are not thought complete without an out-door article of one sort or another, is a pleasing sign of the growth of our public in appreciation of nature. In *Harper's Magazine* for December, as well as in *Scribner's*, we find such an article—"A Midnight Ramble"—from the well-known pen of Mr. Hamilton Gibson. It is not so appropriate in theme to midwinter, we think for a moment, as the Adirondack chapter. But after a moment we are well content, for what can be pleasanter in midwinter than to find ourselves transported to midsummer—shown its loveliness and mystery in sympathetic words and charming pictures? Much as Mr. Gibson has written in former days about woodland rambles, he has found a new theme to-day. Taking us out-doors at midnight, he shows us many old friends with new faces—sleepy, drooping, dew-besprinkled faces, often very different from those the sun beholds. Much real instruction is prettily given in the text, which will tempt many readers to nocturnal explorations with a lantern. Yet, once again, the illustrations are still more attractive. The contrasted groups of Locust, Melilot, Lupine and Oxalis, here awake and there asleep, are particularly charming, while nothing could be more fairy-like than the sphinx-moths among the Honey-suckles, or more truthful and graceful than the Nasturtiums, and, especially, the Evening Primroses. He must be a happy man who can see so much in nature as Mr. Gibson, can write about it so well and can picture it so daintily. Most of us would be content with either one of his three gifts.

Meetings of Societies.

The Forestry Congress at Atlanta.

THE Forestry Meeting at Atlanta on December 5th, 6th and 7th, was marked by the termination of the existence of the southern organization and its union with the American Forestry Congress. The attendance at the meetings was large, and the people of Atlanta, the members of the Legislature, and the officers of the city and state governments, were constant and profuse in their courtesies to the visitors. There were pleasant receptions at the house of Governor Gordon and other places, there were very full and accurate reports in the leading newspapers, and the Congress and its objects and work received from everybody the most cordial and serious respect.

There were interesting essays and addresses by Colonel E. T. Ensign, on Colorado Forestry, and on Rocky Mountain Forests; by General Greely, on Rainfall; by Professor Charles Mohr, on Forest Lands; by Professor George F. Atkinson, on the Relations of Trees to Bird and Insect Life; by Mr. M. J. Kerns, on Public Parks and Forests; by Mrs. Ellen Call Long, on the Forest Features of Florida; by Professor Eggleston, on the Forestry Outlook; and the discussions were interesting, though they were restricted somewhat by the feeling that the tariff is an inflammable subject and one to be kept out of a Forestry Congress.

On the last day of the session there was a tree-planting at the Girls' High School, in the presence of vast throngs of people, with short addresses by members of the Congress. Officers were elected, committees appointed, and the customary resolutions adopted. There was nothing remarkable or striking in the proceedings, but the meeting was pleasant and interesting. The Congress represents very well the official side of forestry in this country, the ideas and work of the Forestry Division of the Department of Agriculture at Washington. Its vitality hitherto has, in great degree, been

the effect of Secretary Fernow's earnestness. He has now relinquished the Secretaryship, in order to have more time for his official work. It is likely that the next meeting of the Congress will be held in Philadelphia, if the people interested in forestry there so desire.

Notes.

From a note in *The Gardeners' Chronicle* of a recent date it appears that 2,300 varieties of Chrysanthemums are grown in the garden of the Royal Horticultural Society at Chiswick, near London.

The readership in botany in the University of Cambridge was last month conferred upon Mr. Francis Darwin, a son of Charles Darwin, in place of Mr. Vines, now professor of botany at Oxford.

At the exhibition lately held in Paris of fruits and appliances used in the manufacture of cider and perry, the first prize for a collection of cider-apples and the second prize for cider were carried off by English exhibitors.

At the second meeting of "L'Orchidienne" held at Brussels on November 11th, first-class certificates were awarded to *Cypripedium Harrisianum polychromum*, from Dr. Carnus; to *Ansellia Africana aurea*, from Madame Gibez; to *Oncidium Forbesii maximum*, from the Count of Bousies; to *Vanda carulea* and *Cypripedium callosum*, from Madame de Cannart d'Hamale; and to *Cypripedium nitens superbum*, from Mr. Pecters.

On a wall which divides the pleasure grounds from the kitchen garden at Warnham Court, a residence in the south of England, a fine specimen of *Magnolia grandiflora* has been trained so that it covers a space about eighty yards in length. A correspondent of a horticultural journal, describing it last summer, said the profusion of bloom was such that on one portion about a foot square he counted seven fully expanded flowers and several buds.

In some of the larger European botanical gardens—as, for example, the University garden in Berlin and the one in Heidelberg—the labels used for the trees are of zinc, with the name stamped in intaglio and then defined with oil paint. These labels are much cheaper than the porcelain ones, more commonly seen, and are equally durable, needing no care but the renewal, at long intervals, of the paint; and an additional advantage is found in the fact that they can be made on the spot by unskilled workmen.

Messrs. Tiffany & Co., of Union Square, in this city, have on exhibition a remarkable specimen of petrified wood from the fossil forest of Coriza, in Arizona Territory. It is the section of a large tree and measures thirty-six inches in height by forty and a half inches in greatest diameter. The character of the bark is well preserved, and the top, which has been carefully polished, is very beautiful in its agate-like colors, as well as interesting by reason of its clearly revealed markings. It is said to be the largest fossil specimen that has been thus prepared.

As this paper goes to press we learn that Senator Stanford has decided to devote to the Arboretum connected with the Leland Stanford, Jr., University, as much space as is needed to contain every tree that can be made to grow in that climate with the aid of irrigation. The trees are to be planted in open order, and arranged with vistas and views, so that the Arboretum will have the features of a pleasure-ground in addition to its scientific character. Mr. Olmsted is to make a design of the work and Mr. Thomas Douglas is to be superintendent of the planting.

The Largest Elm tree in Norway is supposed to be a specimen of *Ulmus montana* which stands in the parsonage grounds of the little town of Eker, a few miles from Christiania. When it was examined by Schuebeler in 1871, while he was preparing his *Viridarium norvegicum*, it measured seventy-five feet in height and six feet in diameter. *U. montana* is the only species of Elm which grows wild in Norway, and it never attains the dimensions of *U. campestris*, the species which produces most of the magnificent specimens found in Germany and England.

A Rose which flowers in the open ground in New England, after the middle of November, is a plant worth a place in any northern garden, even if its flowers do not possess the size or all the substance of some more modern varieties. Such a Rose is Hermosa, one of the Bourbon breed, which dates back as far as 1840. It is an abundant and constant bloomer throughout the summer and autumn; and there are not

many days during five or six months of the year, or until hard freezing checks vegetation, when flowers cannot be gathered from a well established plant. The flowers are pink and very fragrant. The plants, like most of the Bourbons, require some slight protection at the north.

In the horticultural papers of Germany frequent complaints are made that too little regard is paid to mere beauty by those who judge plants and reward their growers at public exhibitions. Novelty and singularity are too highly esteemed, it is said, and when the judge is a professional florist he is too apt to think exclusively of the plant's practical qualifications—to consider simply whether it is a strong and prolific grower and can be turned to practical account for commercial use. Of course these considerations must always be largely taken into account, but there is truth in the remark that pure beauty as such has likewise a right to recognition. Nor is the need that it should be more highly esteemed confined to Germany only.

The use of benzine has been found effectual in France in destroying the white grubs (the larvæ of the May or Dor Bug), which often do immense damage, especially in dry seasons, to lawns, Strawberry plants, seedling trees and other nursery stock. Holes are made in the ground infested with the grubs with one of the sharp iron dibles used sometimes in transplanting small plants, and the benzine is poured into them. Fifty grains of benzine are used to the square yard and care is taken to insert it above the plane of the feeding ground of the grubs. In an experiment recently made by one of the French forest officers, and reported at a meeting of the National Agricultural Society, the grubs on twelve acres were destroyed at a cost of only \$3.20 an acre.

The London papers report an interesting lawsuit lately won by Sander, the well-known Orchid grower of St. Albans, against the Duchess of Montrose, to recover the amount of his bill for plants and various services connected with fitting up the conservatories at Tifton Lodge, near Newmarket. One item of the bill was for 1,000 Orchids which were furnished at a guinea a plant, the seller being allowed to select what plants he chose. The interesting features of the whole case centred in the letters written by the Duchess's gardener to the manager of the St. Albans Nurseries, and produced during the trial. The tone of this correspondence, and the intimations which it contains, should make those persons who know something about their own gardens congratulate themselves that they are not entirely in the hands of their gardeners.

Attention is called in the European journals to the fact that *Magnolia Soulangeana*, one of the hybrids between *M. conspicua* and *M. purpurea*, bloomed this year in England during the month of September. The second blooming of this plant is not, however, an unusual occurrence in this country. A few flowers appear almost every year during August and September, and this year the trees were quite covered with them. The flowers are much smaller, however—scarcely half the size of those which appear in spring—and they do not expand fully. It is rather a curious fact that neither of the parents of this hybrid, or other hybrids of similar origin, notably *M. Norbertiana*, show any tendency to produce autumn flowers. The Japanese *M. stellata* has been known to flower in the autumn in this country, but not commonly or abundantly.

The Society of Amateur Photographers has recently held an exhibition of the work of its members at its rooms on Thirty-sixth Street, where welcome evidence was given of a growth in artistic feeling, as well as in the mere knowledge of photographic processes. Miss Catherine Weed Barnes sent some excellent rural views; Mrs. A. F. Arnold, a picture of Mangroves in Florida, which was really remarkable for good composition and effective portrayal of the trees, and Mr. David Williams, a large number of subjects most intelligently chosen. Lieutenant C. P. Howell contributed a series of small pictures taken in China, some of which were interesting, or, at least, very amusing, from a horticultural point of view. They represented figures, apparently of life size, in which only the heads and hands were visible, the other portions being thickly draped with growing vines. In one, a branch had been trained as a standard and passed through the outstretched hand of the figure to develop above it into an open umbrella. Of course one cannot call such oddities works of horticultural art, but it was certainly worth while to reproduce them for western eyes, as nothing could be more singular or more Chinese in effect—which means something very different from Japanese in effect—than a row of these figures, standing in large pots in the most grotesque and humorous attitudes, clothed in their rather ragged and prickly-looking vesture of vines.

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A Botanic Garden for the City of New York.

THE daily papers have been discussing lately the possibility of establishing a botanic garden in this city. The movement certainly has not been made too soon. Botanical and zoological gardens form a part, and a very important part, of the educational equipment of a great metropolis; and it is not creditable to the people of this city that it is allowed to fall so far behind the other great commercial centres of the world in this respect. A thoroughly well-equipped and well-maintained garden, carried on upon the principles which should govern such an establishment, can exert a wonderful influence in developing and stimulating the intelligence of the public, not only by increasing the knowledge of plants and plant-geography, but of all that relates to horticulture and gardening.

A good garden, however, is not an easy thing to establish. It must be something more than a mere collection of growing plants; it cannot serve its purpose, indeed it cannot be administered, unless the living collections are supplemented by a herbarium and library, without which no garden is worthy of the name. A museum, too, in which the products of all plants can be grouped, while not essential for the administration of a garden, is an attractive and valuable educational feature, which should be provided for in any comprehensive scheme of this character.

There are two reasons why botanical gardens fail to accomplish what is expected of them, and why, from the point of view of popular instruction, there are so very few useful ones. Few persons realize what a very large sum of money it costs to found and maintain a great botanical establishment, and the gardens of the world which are adequately supported with proper endowments may be counted upon the fingers of one hand. The second reason why such gardens fail is found generally in the difficulty of securing men in whom scientific attainments are joined to great administrative capacity to manage them. The man who successfully conducts a botanical establishment, capable of influencing the intelligence of a great metropolitan population, must possess qualifications of the highest

order, and an enthusiasm for his work which will enable him to resist the temptations of more lucrative employment, and the opportunity of more immediate influence, which the attainments and character of such a man are pretty sure to bring to him. The gardens at Kew, near London, are what they are to-day—the finest botanical establishment in the world—not because they have been lavishly supported by the British government, but because, through circumstances unprecedentedly favorable, they have been controlled for three generations by men eminent in scientific attainment and administrative ability.

We call attention to these facts, not because we are not heartily in favor of the establishment of a botanical garden in this city, but in order that the people of New York may realize that it is no easy matter to secure a good one; that a good deal of money will be needed to support it; and that the proper man to direct the expenditure of this money must be something more than a good gardener or a successful florist, if the garden is to accomplish what is expected of it.

A garden, to be successful, like any other museum, must be disassociated entirely from politics in order to secure for it a continuation of management in the same hands. This is essential. The botanic garden of New York must be carried on without any reference to politics, and if this cannot be done the scheme had much better be abandoned at the outset. There is no need of any more botanical gardens in the world run for the purpose of supplying bouquets and dinner-table decorations for the politicians who control the appointment of the managers; or to serve as a means for advancing commercial or private interests.

The question of a site for a botanic garden in the city of New York presents some difficulties. There are certainly nowhere in the Central Park thirty or forty acres that can be spared for this purpose, or which are suitable for it. It has been urged that a garden in one of the new parks would be too remote from the great mass of population to be useful, but it would not be more remote from the centre of the city than the garden at Kew is from the centre of the London population, which, during some pleasant afternoons, is visited by more than a hundred thousand people. There is an advantage, too, in having the garden as far as possible from the dust and smoke of the city, which must in time influence Central Park unfavorably, and which is almost fatal to a good garden. It is probable, therefore, that if New York ever has a botanical garden at all proportionate to its size, it will have to be located in or in connection with one of the new parks, and whether such a garden is established in this century or not, a proper site should be provided for it in any scheme which may be adopted for their improvement.

There seems to be no reason now why such a garden might not be carried on under the control of a board of managers, in the same way that the Museums of Art and Natural History are controlled, or by the trustees of Columbia College, either independently or forming part of a larger board. Columbia College already owns a very large and valuable herbarium, and a very considerable botanical library. These, in order to avoid duplication, might very suitably serve as a nucleus for the new establishment. The Museum of Natural History contains a special collection, the magnificent gift of a public-spirited citizen of this town, which might well be the foundation of the new museum, and which would give to it at once a character possessed by no other botanical museum in the world.

But what the situation requires, if the desire for a botanical garden really exists in this community, is that some man of wealth, influence and public spirit, fully alive to the importance of making New York a metropolitan city in the truest sense, should appear and gather together the material already available, raise the funds necessary for the establishment, and secure from the city a suitable location, and such co-operation as may be necessary. When this has been done, and the man who can organize and carry on

such a garden has been secured—and the demand will sooner or later find or develop him—New York will have a botanical establishment worthy of its intelligence and wealth, which will instruct and enlighten its people and make its influence felt for good from one end of the land to the other. The man or men who can accomplish this will, we believe, be as worthy of the honor and gratitude of the citizens of New York as any who have given their time and money for its improvement and advancement.

Fruit and Vegetables under Glass.

A SCORE of years ago fresh fruit and vegetables grown under glass were hardly to be found in any abundance or variety in the winter markets of our great cities. Enterprising gardeners there were in private places who were ambitious to prove their skill by furnishing home-grown Asparagus and Green Peas for the Christmas dinner; but unseasonable delicacies of this sort rarely, if ever, found their way to consumers from commercial growers through the ordinary channels of trade. It is true still that many of the choice grapes, nectarines, peaches and strawberries for city tables come from green-houses that are not strictly commercial. It often happens that in private places fruit and vegetables are produced in excess of the family needs, and the surplus is sold to the city dealer. But, aside from this somewhat irregular traffic, the growing of winter fruit and vegetables of nearly every variety for market has become an important industry, and a rapidly growing one in spite of the fact that facilities for transporting perishable products from warmer climates are multiplying and improving every year.

Cold-frames and pits which were originally used to lengthen out the season in autumn and hasten the coming of spring, were very naturally succeeded by cool houses, which offered every advantage given by the frames, with much greater convenience. But an apparatus for heating such houses will not alone suffice to insure a crop of winter vegetables. Special experience and skill are required if any profit is realized, for one may be an expert in growing Tomatoes, for example, out-of-doors, and still be unable to persuade his plants under changed conditions to set any fruit. For a month past hot-house tomatoes have been in strong demand here at sixty cents a pound, wholesale, and this is not an uncommon price. They have sold in this city at a dollar a pound when tomatoes fresh from Havana were bringing seventy-five cents a peck. This means that hot-house tomatoes have a genuine value, which comes from superior quality—for this difference in price cannot be entirely due to a mere fancy—and that the skill to grow them well is not generally possessed by market-gardeners—or they would be more abundant. The best growers now can produce beautifully colored, well-flavored, and solid, ripe tomatoes for winter marketing within three months from the day the seed is sown. To accomplish this, varieties specially adapted to culture under glass have been originated, with size and habit of growth that insure the greatest amount of fruit in a given space—that is, with a given amount of fuel. Expedients have been devised for insuring fertilization so that the plants may set fruit well down to the ground. In short, the needs of the plant under artificial conditions have been so thoroughly studied, that a good winter crop of tomatoes can be looked for with greater certainty than can a good field-crop in the summer.

But even when all this special knowledge becomes common property, and when competition is sharpened by a growing demand, choice fruits and vegetables out of their season will continue to be classed among luxuries. There are other crops which require even greater skill for profitable production than the tomato. This is especially true of some of the tree-fruits which necessarily occupy a large space and are most exacting in their demands for special attention throughout the entire year. Some of them at flowering time even show a preference for a particular

kind of insect to help them in the distribution of their pollen. Peaches and nectarines at six dollars a dozen, grapes at five dollars a pound, with strawberries at five dollars a basket (and very diminutive baskets have been selling at that rate on Broadway within a week), are expensive articles of food, but, from the grower's point of view, these prices are not exorbitant at certain seasons of the year. And a vegetable as easy to force as asparagus may well command two dollars or more a bunch, because the plants must be cared for three or four years before they are strong enough to produce shoots of proper size, and after one season's use under glass they are practically worthless. Mushrooms at a dollar and a half a pound, green peas at a dollar for a scant pint when shelled, snap-beans worth enough to be sold by a count of the pods, are paying crops only when carefully grown. Even at these high prices, every foot of space must be employed, with a crop of one kind coming on between the rows of another as it becomes fit to market, and with a plant ready always to occupy every place made vacant by the removal of another. One grower in Jersey City, who has 25,000 square feet of glass devoted to Radishes alone, and who is prepared to deliver 12,000 bunches a week, considers it an unsuccessful season when he cannot market five crops between the 20th of September and spring weather.

A few years ago these expensive fruits and vegetables were found only in the shops of a few retail dealers in fancy fruits, but now the call for these products has so increased, that nearly every variety of garden-fruit and vegetables can be found among the regular consignments to wholesale dealers. And it may be added, that certain other fruits and vegetables can rarely be found here, except when grown under glass. The long cucumbers, so highly prized by some people, will only develop to advantage when an almost tropical climate is provided for them. Certain varieties of European strawberries, with a flavor greatly relished, are among the best for forcing, although they refuse to flourish in our gardens. It is well known that the varieties of Potato most highly prized in England will come to nothing here under out-door cultivation, and an enterprising marketman near this city has now growing in his green-house some Ash-leaf and Walnut-leaf Kidneys, in the hope that some one will pay him a dollar a pound for his tubers, on account of their supposed nutty flavor, or because they are strictly English.

After all, imagination may help to give an inflated value to these fruits out of season, and families of moderate means need not lack for wholesome and toothsome vegetables at any season, thanks to cold storage, quick transportation and approved methods of preserving. And there are old-fashioned people who entertain the very old-fashioned idea that no fruit or vegetable is ever really pleasing to the taste except in its proper season.

Christmas in the Pines.

THE Holly and Mistletoe naturally take the first place as decorative plants at Christmas time, as they have been from time immemorial identified with this festival; and at this season the Holly's "armed and varnished leaves" and clusters of bright red fruit are at their best, and so are the clear white waxen berries of the Mistletoe interspersed among its thick pale-green leaves.

But there are many other charming plants to be found in the Pines that can be used with even better effect than these. The Laurel is much more easy to handle than the Holly, and its glossy green leaves are quite as beautiful, and they can be lighted up with clusters of the bright scarlet berries of the Black Alder, which can be found in abundance in the damp barrens. The large, thick, shining leaves of *Magnolia glauca* can also be put to effective use with other foliage where extensive decoration is required. The deliciously fragrant Wax Myrtle should not be neglected. The glossy leaves as well as the thick clusters of pearl-gray fruit make it one of the very best plants to group among the scarlets of the Holly and Alder.

Some of the smaller shrubs, too, are now invested with a rare beauty which seems more striking since the foliage of so many of their neighbors has faded and fallen; and this is

especially true of the little *Leiophyllum*, whose small shining leaves are clustered thickly at the ends of its branches; while among the larger trees the Cedars and Pines have more to offer than boughs of dark green foliage. The bright gray fruit of the one and the symmetrical cones of the other are invaluable for giving character to decorative work.

Where heavy massing is not desired, evergreen vines like *Smilax Walteri* have a grace that is unrivaled, although it requires some resolution to penetrate the thickets where it hangs out its clusters of coral-colored fruit. The common Green-brier (*S. rotundifolia*) is also beautiful now, being evergreen here, abundant and loaded with blue-black berries. The trailing stems, evergreen leaves and brilliant fruit of the larger Cranberry (*Vaccinium macrocarpum*) are not to be neglected. The running Swamp Blackberry has been mentioned before in these notes, but the delicate veining and exquisite color of the leaves upon the slender and flexible vine when hanging in festoons against a light background seem the perfection of dainty grace.

The aromatic Wintergreen is also here in the greatest profusion, and its leaves have now taken on various colors which harmonize well with the cheerful red of its berries. The Prince's Pine (*Chimaphila umbellata* and *C. maculata*) are among the very best of the smaller plants for decoration, especially the latter, the leaves of which are variegated with white, while at Christmas time a rosy tinge is added. Nothing can be more beautiful than groups of these little plants mixed with the deep-green Laurel.

Several species of Club-moss (*Lycopodium*) grow in the Pines, and these can always be used to good advantage. Their flexible stems are easily managed, and their foliage retains its fresh look for a long time.

Groups of dry seed-pods are also effective scattered here and there among the evergreens. The pretty urn-shaped seed vessels of the Meadow Beauty (*Rhexia Virginica*), with many others that may suit the fancy, are now found in plenty. Surely the Pines offer abundant material for Christmas decoration, but the beauty and grace with which the Pines themselves are adorned is indescribable.

Mary Treat.

Vineland, N. J.

Florida Oranges.

THE present orange crop in Florida is twice as large as the last, and it is a matter of no little solicitude, with all who are interested in orange growing, to know how the markets will bear the additional strain. The last crop sold at satisfactory prices, many northern dealers coming to Florida to buy the fruit, both in the groves and in the auction market at Jacksonville. A home market is the ideal of the orange growers, but it is not likely to become permanent, because the producers will not unite on any one plan of action, but persist in sending their fruit, each for himself, to hundreds of commission houses in the north and west, so that buyers stand the best chance of getting fruit cheap by staying at home. Shippers, as a rule, expect much better returns than they receive under the commission system. Dealers who solicit fruit to sell on commission are prone to hold out flattering inducements, which are too readily believed, while those who come to buy on the ground have to pursue the reverse policy, since they assume all the risks, while the commission merchant throws all the risks on the shipper.

None realize the evils of the commission system better than the Florida orange growers; yet nearly all of them continue to dispose of their fruit in this manner year after year, simply because they will not unite upon some one definite plan of action, by which they might prevent gluts at centres of distribution and needless depreciation in prices. What is still more important, a wider and more equitable distribution of fruit could thus be brought about, which is the only effectual way of counteracting the effects of overproduction. There would be no cause for present apprehension on this score if the product of the Florida growers could be marketed in summer, but, unfortunately, it is in its prime in Winter. In November the fruit is not strictly marketable. If left on the trees till spring much waste results, and in the counties north of Orange Lake there is about one chance in three of losing the entire crop by frost. No reliable means of preserving the fruit fresh, after it has been picked from the trees, is known, except by cold storage, which is probably too expensive, and when taken out of cold storage houses fruit is said to go down quite rapidly. Californian Oranges have the advantage of being late in ripening, not being marketable until spring. It seems advisable that late varieties should be sought for and largely planted in southern Florida.

At present a movement is on foot to open up European markets for Florida oranges. Considerable fruit was sent to England last winter, and the returns were quite satisfactory. This season a company in New York has taken up the business of shipping Florida Oranges to Europe, and the results will be watched with much interest. It appears that Mediterranean fruit does not come into market before January, and hence, that there may be good demand for Florida fruit through December, and perhaps later. The danger to be apprehended is that much immature fruit, shipped in November, may create a prejudice at the outstart which will be damaging. This evil is experienced every year in the American market, as a result of picking fruit before it has acquired proper color and flavor, even as early as in October. Despite persistent warnings through the Florida papers, many persons will begin shipping as soon as the yellow hue makes its appearance on the fruit. It sells well for a few weeks, till the public has had a taste of the fruit, and then comes a reaction, from the effects of which the market does not recover before Christmas week.

Many advocate the selling of Florida oranges by auction in northern cities, while some oppose it. This system has been pretty well tested, but the average returns have not differed materially from those received from commission merchants; so the latter may be said to remain masters of the situation. It should be observed that the leading orange growers, who have established a reputation for their fruit and have selected reliable agents to sell it, have a great advantage over others and realize much more satisfactory returns. Orange growers of this class can hardly be induced to join themselves to any general organization, and this fact is, perhaps, the greatest impediment to any effort at combination. Those who are naturally looked to for leadership will not respond, and a co-operative movement that lacks their indorsement is looked upon with distrust. It will be seen that there is something lacking to make orange growing all that fancy has painted it, and that while the lack may be supplied, it is much easier to prescribe the remedy than to apply it. Possibly something may be evolved from the experience of the present season which will tend to advance the industry in the estimation of those who would not follow it merely from æsthetic considerations.

Jacksonville, Fla.

A. H. Curtiss.

Foreign Correspondence.

London Letter.

FOLLOWING on a summer which was remarkable for the absence of sunshine and heat, we are experiencing a November of exceptional warmth and openness. Primroses, the harbingers of spring, are flowering in the hedge-rows and copses almost as freely as if it were March; Violets are equally abundant; while the hardy Cyclamens, Christmas Roses, winter Heliotrope, and many other plants which usually sleep hard till January, are in full bloom. Not only the flowers, but also the birds, are deceived by the weather, and thrushes sing as lustily as if it were pairing time. Many deciduous trees and shrubs still retain their foliage; bedding plants, such as Verbenas, are still healthy and flowering. Truly this has been a very mixed year in regard to weather.

Primula capitata is the sweetest herbaceous plant now in flower. Its normal flowering time is May or June, but it appears to have been affected by the weather in the same way as the common Primrose. As a plant for an unheated greenhouse it occupies a foremost place here. I have a bunch of its purple, compact heads of flowers before me as I write, and their powerful odor, Hawthorn-like, fills the whole room. Some of the heads are fully two inches across and contain about a hundred blooms and buds, the latter, occupying the centre, and covered with white meal. The stalks are nine inches high, rising from the centre of a tuft of healthy foliage, not unlike that of *P. vulgaris*. It is Himalayan, and comes freely from seed. The pretty, white Zephyr flower (*Zephyranthes candida*) is in full blossom in a sunny border out-of-doors. It is the only species that is happy in the open border in the neighborhood of London. The other kinds, especially *Z. carinata*, are in great favor here as summer-flowering greenhouse plants.

Cyrtanthus lutescens and *C. Mackenii*, although not the brightest in color nor largest in flower, have proved much the most useful of the dozen or so species which have been cultivated here at one time or other. The genus is one of the hardest of the Cape genera of bulbs to grow successfully in Europe; but the above are exceptions, as, for the last two years, they have grown and flowered most freely at Kew

under very simple treatment. They are scarcely ever out of bloom, and just now they are unusually good, which is a point greatly in their favor when considering their claims as garden plants. *C. lutescens* has leaves a foot long, half an inch broad, green and fleshy; the scapes are a foot long, each bearing an umbel of from six to nine flowers of a soft lemon-yellow color which are one and a half inches long, narrow tubular, the six short segments reflexed, the stamens as long as the tube, the style a little longer. Each flower keeps fresh over a month, so that for bouquet, and like purposes, they would prove of great value. *C. Mackenii* is similar, but pure white, the tube slightly bent, and the segments not reflexed; the flowers measure nearly one inch across. In a cool green-house, with the same treatment as suits *Vallota*, these two plants are certain to prove successful.

Hippeastrum aulicum.—Everybody is looking after the new and flashy hybrid *Amaryllises*, but no one appears to care for the species. And yet some of them are first-rate flowering plants, with plenty of color attractions. Such a one is the above, and when one recollects that this and *H. reticulatum* are the only two which bloom before Christmas, its claims as a garden plant are undoubted. There are some fine examples of it in bloom at Kew now. They have plenty of full sized foliage (another good point), the scapes are stout, nearly two feet high, and bear each two flowers, six inches long and six inches across, of a deep crimson color, with darker shadings, and a green star at the base inside. The flowers have been open a fortnight and are still good.

Orchids.—We have as many named varieties of *Lælia anceps* as of *Cattleya Mossia*, and some of them are as much alike as two peas. There are good, well-marked varieties, also, and we do not seem to have reached the end of them yet, for the Orchid of the week is a very beautiful and distinct variety of *L. anceps* which has flowered with Mr. Sander at St. Albans, and which he has named *Amesiana*, after Mr. Ames, of North Easton, Massachusetts. The width of the flower is four inches; the sepals, one-half inch broad, narrowed to a long point; the petals, one and one-half inches broad, also long-pointed; both sepals and petals are ivory-white, tipped with rose-purple. The labellum is smaller than in the type, the lateral lobes are incurved, white, with lines of red inside, the front lobe small, narrowed almost to a stalk at the base, and colored rich maroon-purple. There is also a very prominent ridge-like crest running from the front lobe into the throat which is colored bright yellow. This variety is considered the equal in beauty of *L. anceps Dawsoni*. Its value is shown by the price paid for it by Mr. Sander—200 guineas—although, in 1883, this same plant was purchased from Mr. Sander for two guineas; but it had not then flowered. Another addition to the list of sensational Orchids, *Odontoglossum Schræderianum*, is also in flower in the St. Albans nursery. It is an unusually stately plant, standing between two widely distinct species, *O. Karwinski* and *O. laeve*. It resembles both in growth and has a long paniculate inflorescence; each flower measures three inches across, the sepals and petals are one and one-quarter inches long, one-half an inch wide, pointed, spreading, the three upper ones curved upwards, the two lower curved down and inwards; they are colored yellowish-white, with large and numerous blotches of purple. The lip is pandurate, an inch long, nearly as broad, the basal half a bright crimson, the apical half pure white. It is a remarkable and handsome species, certain to become a popular Orchid for the cool house. It was introduced and flowered in 1887.

Odontoglossum Harryanum has bounded into the very front rank of Orchids. It is a most delightful plant, full of charming variety, quaint and attractive in form, fantastically yet richly colored, and, withal, as easily grown as *O. crispum*, and almost as cheap. A good garden plant ought always to be abundant and cheap. The plant of *O. Harryanum* which first flowered had but two blooms, and those not of the best, yet they made the eyes of Professor Reichenbach twinkle with delight when he saw them (he was staying at Kew at the time). But we have now spikes with eight, nine and eleven flowers, and collectors say there are even more. A fine variety with eleven flowers on the spike is now in bloom at Kew.

Masdevallias are general favorites in England, even the small "botanical" species finding many admirers. At Kew we have over eighty species, about a dozen of which are in flower now. Three of the most remarkable are, *M. macrura*, a large-flowered, long-tailed species, the sepals united at the base and forming a shallow cup, one inch across, and then separating into three narrow tails six inches long. Inside there are lines and warts of a purplish color, the rest of the flower being yellowish green; the petals and lip are very

diminutive. The leaves are one foot long, two inches across, thick and leathery. The peduncle is as long as the leaves. *M. Mooreana* is another large flowered kind belonging to the *Peristeria* and *Coriacea* group. The sepals form a cup one inch across, with a prominent chin; they then separate into three projecting tails three inches long, the lower ones united by their inner edge and then turned outwards; these are purple, the upper one being yellow with purple lines. The lip is large, tongue-shaped, and colored dark purple. Leaves are six inches long, one and one-quarter inches wide, thick, fleshy, and very dark green. The last of the trio is *M. pulvinaris*. It is a very singular species, quite distinct from any other cultivated *Masdevallia*. The scape is one and one-half feet high, purple, clothed with close-fitting bracts and covered with a whitish scabridity, rough as sandpaper, but slightly glutinous. The flowers are produced on the upper six inches of the scape, about a dozen on each scape. They are an inch apart, and each one is an inch long, reversed, so that the labellum is uppermost; the two upper sepals are united and form a boat-shaped hood. Inside they bear two oblong, fleshy, yellow, cushion-like processes, the object of which is not clear; the lower sepal is concave and as long as the upper ones. Color purple and dull yellow. Botanically, this Orchid is the most interesting plant now in flower at Kew, but its lack of bright color will prevent it from ever becoming a popular garden plant.

Cattleya Gaskelliana is worth growing as a market plant, or, at all events, for the sake of its flowers, which are deliciously fragrant, beautiful in form and color, very freely produced, and at their best in October and November. In Messrs. Low & Co.'s Nursery at Clapton there are many thousands of this Orchid, occupying a very large house, and from them bushels of bloom have been cut and marketed this autumn. The species is very easily managed, as easily as *C. Mossia*.

Disa racemosa.—There are only two good garden Disas, namely, the superb old *D. grandiflora*, of which every garden possesses, or should possess, dozens, and *D. racemosa*. This is a recent introduction, but it bids fair to become a popular Orchid. It is easily grown, requiring the same treatment as *D. grandiflora*, and blooms abundantly in spring. Each growth produces one or two tall spikes, each bearing from six to twelve deep-rose flowers, which last three or four weeks. It is a native of the east side of the Cape.

Vanda Amesiana is a delightful plant, of which little is known yet, but quite enough to satisfy one that it will prove a first-class garden Orchid. It was introduced and flowered by Messrs. Low & Co. in 1887, and a second imported one in excellent health has recently arrived. The narrow fleshy leaves are six inches long, the erect crowded spike of flowers, each one and one-half inches across, with pure white sepals and petals, and a large rosy-red lip; these give this species a character distinct among *Vandas*. It is also easily grown if placed in the same house with *Phalænopsis*.

London.

W. Watson.

New or Little Known Plants.

Syringa villosa.

AN account of this beautiful Lilac, of which an illustration appears upon the opposite page, was published upon page 222 of this journal. It is a native of northern China, and the plant from which our illustration was made was raised in the Arnold Arboretum from seed sent from Pekin by Dr. Bretschneider. *Syringa villosa* is a vigorous and very hardy shrub, now five feet high here, by as much through the branches, with stout, erect, pale brown shoots, marked with white spots, broad and ample pale green strongly reticulate-veined leaves, and narrow, and rather obtuse, often interrupted clusters of pale rose or flesh-colored flowers, which are decidedly less fragrant than those of the common Lilac. They appear here towards the end of May.

S. villosa is a valuable and desirable addition to gardens. The only drawback which it has yet developed as an ornamental plant is found in the fact that its leaves fall very early, or after the first frost, without any change of color.

Our plant seems identical with the one recently figured in the *Revue Horticole* (November 1st) under the name *Syringa Emodi rosea*, which has flowered in the *Jardin des Plantes*, in Paris, and was raised from seed sent also by Dr. Bretschneider. As was pointed out in the description already referred to, the *S. Emodi* of the Himalaya, in spite

of slight differences of habit and of the form of the leaves. is probably not distinct from the north China plant, so that the name *S. Emodi* should, if this view is adopted, disappear in the older name of *S. villosa*.

C. S. S.

these two apples, the German being altogether superior to the Russian. Yet it is a fact that there is scarcely any difference in their market price. I have been interested in following the market quotations, and find

that only for shipping to England does the Gravenstein lead, and this mostly when grown in Maine. The Maine Gravensteins are so much superior in keeping quality that they may be almost rated as early winter apples. Close to the Gravenstein in popularity with buyers comes the Porter, but this is an apple that bruises so easily, and is injured so greatly by bruising, that it can only be grown profitably for a near market. The Gravenstein was brought into New England from Belgium early in this century, and first propagated in Byfield, Massachusetts. No foreign apple ever achieved a more rapid or better deserved popularity in America. It is one of the very few fall apples of good size, fine appearance and high quality, that can be handled, kept and transported without injury. These merits have given it a position alongside the Hubbardston in the Boston market. Yet there are many other fall apples grown and highly valued for home use. High among these is the Mother, which ripens in October, though its season extends up to and beyond the holidays. Truly, as Cole says, "The Mother has no superior, and very few equals." Yet it is rarely on the street stands, and is hardly known except among old New England families of rural origin or affiliations. The Gravenstein and Hubbardston have gained the lead upon the Mother as a market fruit, notwithstanding its good size, handsome appearance and surpassing quality. Perhaps the chief reason for this is that the Mother, as Downing notes, is "rather too tender for shipment." This apple originated in Bolton, Massachusetts. Next to the Mother comes the Garden Royal (native of Sudbury, Massachusetts), of which Cole says truly, "Nothing is superior," though he adds, "rather small for market." Yet we find it, with Mother, in the best fruit stores, patronized by the old families, and in the gardens of many farmers, though usually but a single tree. It is produced in great perfection about Portland, Maine, and there I have seen it on the stands oftener than in Boston. Garden Royal is about the size, form and color of Fameuse, yet they are easily distinguished by the eye.

The Fameuse is a standard variety in the Boston market, where it goes by the name of "Snow." Being a good shipper, it comes from many directions, and is everywhere for sale about Thanksgiving time. It is grown up to the northern limits of New

England, where its season extends to and beyond New Year's day. It is a handsome, delicate apple, with a delicate, peculiar flavor, everywhere recognized and liked, though it is by no means a rich or aromatic apple. The tree is hardy and productive, but the fruit is liable to spot in unfavorable seasons and localities, sometimes to the extent of making the whole crop unmerchandiseable. This apple is popular, and as commonly grown in Connecticut and Rhode

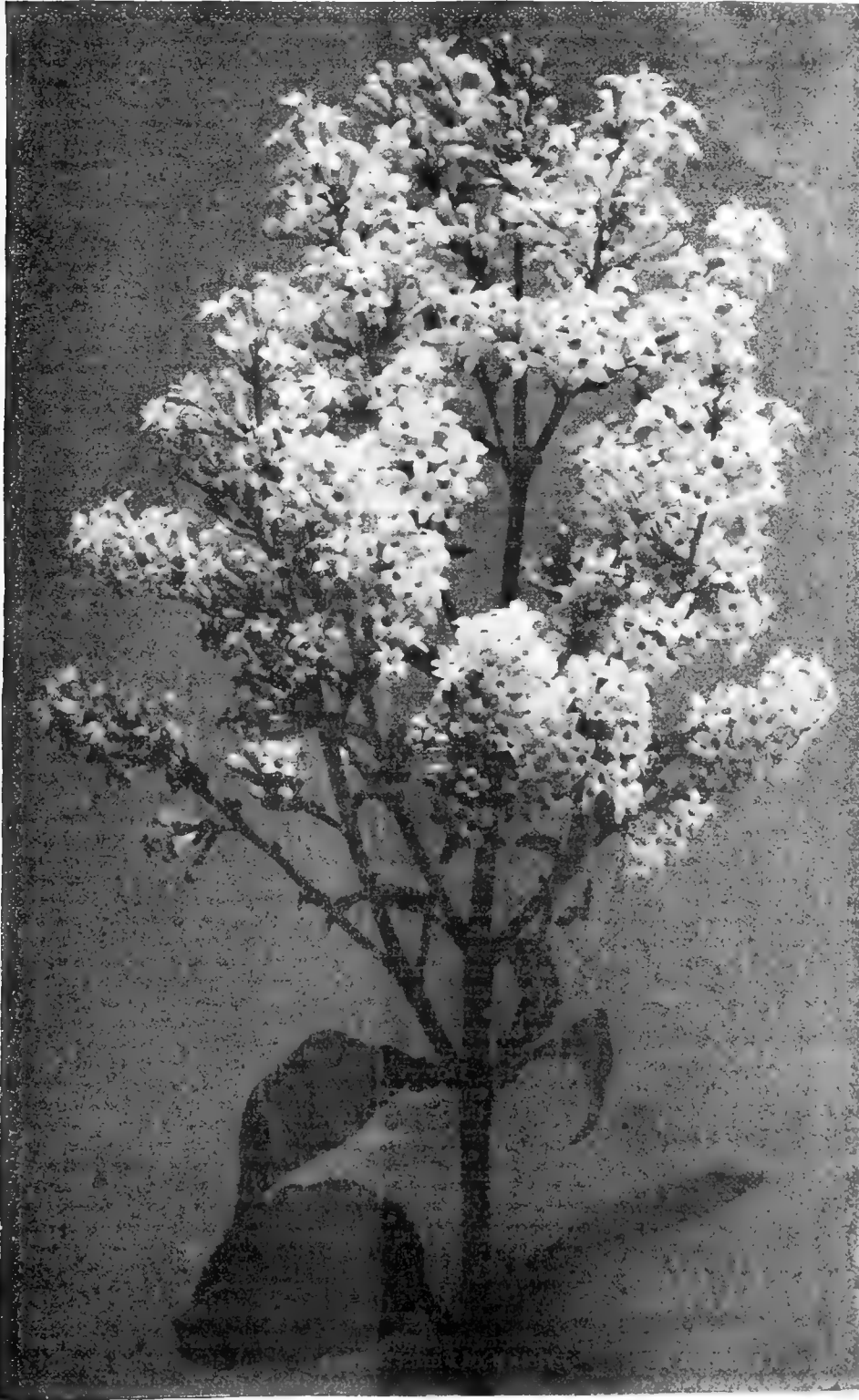


Fig. 83.—*Syringa villosa*.—See page 520.

Cultural Department.

Autumn Apples in New England.

AMONG the autumn apples, the Gravenstein is now decidedly taking the lead throughout the southern half of New England, as the Duchess of Oldenburgh does in the northern half. There is no comparison between the dessert quality of

Island as elsewhere in New England, but the best and fairest fruit comes from the Champlain valley and islands. The Fameuse is of Canadian origin, and Canada has produced a vast number of seedlings from it, some of which, though little known, surpass it in many points. These seedlings are now being made better known, and somewhat disseminated, through the efforts of the Montreal Horticultural Society.

Connecticut's best contribution to our list of fall dessert apples is the Mexico, which is pretty well distributed in the east, yet not largely grown for market. This is a small red apple, much in the style of Fameuse, with tender flesh and a fine, high flavor. Origin, Canterbury, Connecticut.

In New Hampshire Jewett's Fine Red (Nodhead) takes the lead as a fall apple everywhere, both for home use and market. Like the Fameuse, it can be kept into the winter, but does not long retain its remarkably fine, delicious, aromatic flavor. This apple is also well distributed in southern Maine and Vermont. Origin, Hollis, New Hampshire.

The Winthrop Greening is a native fall apple, held in very high esteem in western Maine. It is large, golden yellow, with slight russet and a tinge of red in the sun. This apple has a tender, crisp, and very juicy flesh, with a sprightly, luscious flavor, mildly tart. Its reputation seems to be strictly local.

But the great native fall apple of southern New England (extending somewhat into the winter along the northern range) is unquestionably the Hubbardston Nonesuch, of Massachusetts. Truly does Downing declare that this Apple is worthy of extended culture; and it has attained it. The Hubbardston is found in nearly every orchard in southern New England, but unfortunately its northward range is not so wide as we could wish. It is a failure in most parts of Vermont and New Hampshire, and succeeds only in south-western Maine. A fine, large, roundish, oval apple, striped and splashed with two shades of red, with yellow, juicy, tender flesh, mingling sweetness with sprightly acidity, it is well entitled to class with the best, in our lists. It also has the qualities needed for a great market apple, the tree being vigorous and productive, and the fruit firm enough for transportation.

In northern New England the Duchess of Oldenburgh is planted everywhere, and produces fruit superior in size, beauty and quality to the same variety grown further south. Yet there is only a day or two in its existence when it can be classed as even a tolerably good eating apple. With cold storage it can be kept till Christmas, and this long-kept fruit, losing no beauty, gains considerably in quality, so that it brings good prices.

A favorite fall apple in the cold north-west, for home use, is the Peach of Montreal. This variety is worthless for shipping, as it will not improve if prematurely gathered, while if allowed to mature on the tree it bruises with the slightest touch. The tree is vigorous and productive, and the fruit one of the most beautiful grown, having a creamy skin with a lovely pink blush in the sun. The size is medium to large, form conical, flesh white, delicate, very soft, juicy, subacid, and pleasant in flavor, without much aroma or distinctive taste.

Lyman's Pumpkin Sweet is, I think, the most widely grown and popular among the Fall Apples of this class. The tree is vigorous and productive, and the fruit is especially fine for baking.

T. H. Hoskins.

Newport, Vt.

A Garden of Chrysanthemums.

A NOVEMBER garden, even if filled with the most obscure flowers, would make a very satisfactory ending of the out-door season; but the illustration on the opposite page, from a photograph taken in late November, dimly sets forth what even a small garden can show at that season in the way of Chrysanthemums, which certainly have no rivals among autumn flowers.

Those shown at the side of the house (with the exception of a few pots useful for filling vacancies) are grown where they bloom, and at approach of frosty weather are protected by cold-frame sashes resting on temporary framework. If the weather is very severe, a canvas curtain is dropped in front, and the window of a warm cellar in the rear is opened to temper the air. If kept dry, plants in such a position are seldom injured, in this latitude, before their blooming time is naturally over. The main portion of my collection, some 250 plants, is, however, more thoroughly protected from frost and winds by the tent shown on the right of the picture. This has a ground area of twenty by thirty feet, with fourteen feet ridge, two masts and six feet walls. It is made of sail-duck

and is strongly roped. It is easily raised over the plat by five men in as many minutes when the usual early October frost threatens. The walls are cleft up in pleasant weather, and the plants have as cool treatment as is consistent with safety. The heat is supplied by a Hitchings Base Burner located in the cellar, with a two-inch wrought iron flow and return pipe running around inside the lower base of the walls. With this arrangement the plants passed through two nights this season, with an outside temperature of 20° Fahrenheit, uninjured, and much sharper weather would probably injure none but a few in the centre of the plat. I cannot see that the light in the tent is prejudicial to the coloring of the flowers. The walls are up every fine warm day, and the flowers have a certain amount of strong light in any case. If any flowers are affected they are the pinks, which perhaps come a little lighter in the centre of the tent. Ventilation is somewhat self-regulating, as the wall hooks on the roof under a curtain, leaving open spaces which have to be pinned up when the weather becomes severe.

It is no great trouble to grow Chrysanthemum plants, and I have no general cultural theories to explain. I leave home at eight o'clock in the morning and return at seven in the evening, I keep no gardener, and yet find no difficulty in caring for 400 Chrysanthemums, besides a considerable collection of hardy perennials and other garden plants. My purpose is to grow a large crop of good flowers with the smallest outlay of money and labor.

My practice is to plant out the slips (with a strong stake to each) as early in May as possible, in double rows, say eighteen inches apart each way, with a thirty-inch space between the double rows. For my very heavy soil a liberal supply of horse-manure and bone-dust under each plant affords the needed nutriment. The plants are in no way coddled at any stage, the care being about the same as that given to a crop of Corn. The ground is cultivated several times and kept loose until the surface roots appear, when a mulch of manure is given. Chrysanthemums are very impatient of surplus moisture at the roots (no plants more so), and the object being to produce stocky plants with short joints, they are seldom watered at the roots during a normal season unless they show signs of being dry.

Discretion must be used in reading these signs, as some plants with drooping foliage, like Soleil Levant, always appear to lack moisture. Water is usually applied overhead to keep the foliage fresh and to induce breaks. My plants are never "stopped," as they almost invariably produce more stems than are needed, and, besides this, I prefer to have them throw their blooms high. If plants are frequently stopped, one cannot pluck stems two or three feet long, which add so much grace to the cut flowers. In August the plants are gone over and tied up thoroughly, in anticipation of high winds, and to avoid restaking the stakes are cobwebbed together with strong twine. When ready to show, rails are run between the double rows and the plants tied closely and securely back. The aisles seem narrow, yet several thousand people passed between them last season without injuring a plant. Disbudding is the nice art of Chrysanthemum culture, and is a matter of experience and judgment. In a general way, I prefer to remove all but one bud, preferably the crown bud, from each stem. However thoroughly one disbuds, he will wish before the end of the season that he had removed a few more, for only in this way can fine, characteristic flowers be had. Of course there are exceptions. One reads in the papers frequently of some one who prefers the flowers in all their natural luxuriance, but, in actual practice, I find that visitors universally appreciate the best productions. Six, seven and eight inch flowers are no rarities now, and many of these are as refined as the smaller ones, if not overdone in the culture.

Elizabeth, N. J.

John N. Gerard.

Ferns for Cutting.

IN estimating the relative value of various species and varieties of Ferns for use in a cut state, some special qualities are to be considered, the more important ones being beauty, durability and rapidity of growth. It is also desirable that they should be easy to propagate, so that the stock can be quickly renewed when the plants become weakened by frequent use of the knife. In beauty, few Ferns, if any, excel the *Adiantums*, taken as a group, and several of the varieties, notably *A. Wiegandi*, last a long time when cut.

But though this variety makes a very pretty plant, it has not the elegance and grace of *A. cuneatum*, *A. cuneatum grandiceps* or *A. gracillimum*, the latter having a most beautiful effect when used with skill in arrangements of white or

pink flowers, its delicate pinnae appearing like a green lace-work among the flowers.

In addition to the above-mentioned species and varieties, *A. decorum* may be used as a substitute for *A. cuneatum*, it more convenient to do so, its strong fronds of similar general outline being tough enough to stand considerable exposure. In choice arrangements, those of Orchid flowers, for instance, *A. Farleyense* is almost indispensable. The varieties named are probably the most useful of this family in general cultivation, and all are easily propagated from spores, with the exception of *A. Farleyense*, which is readily increased by division.

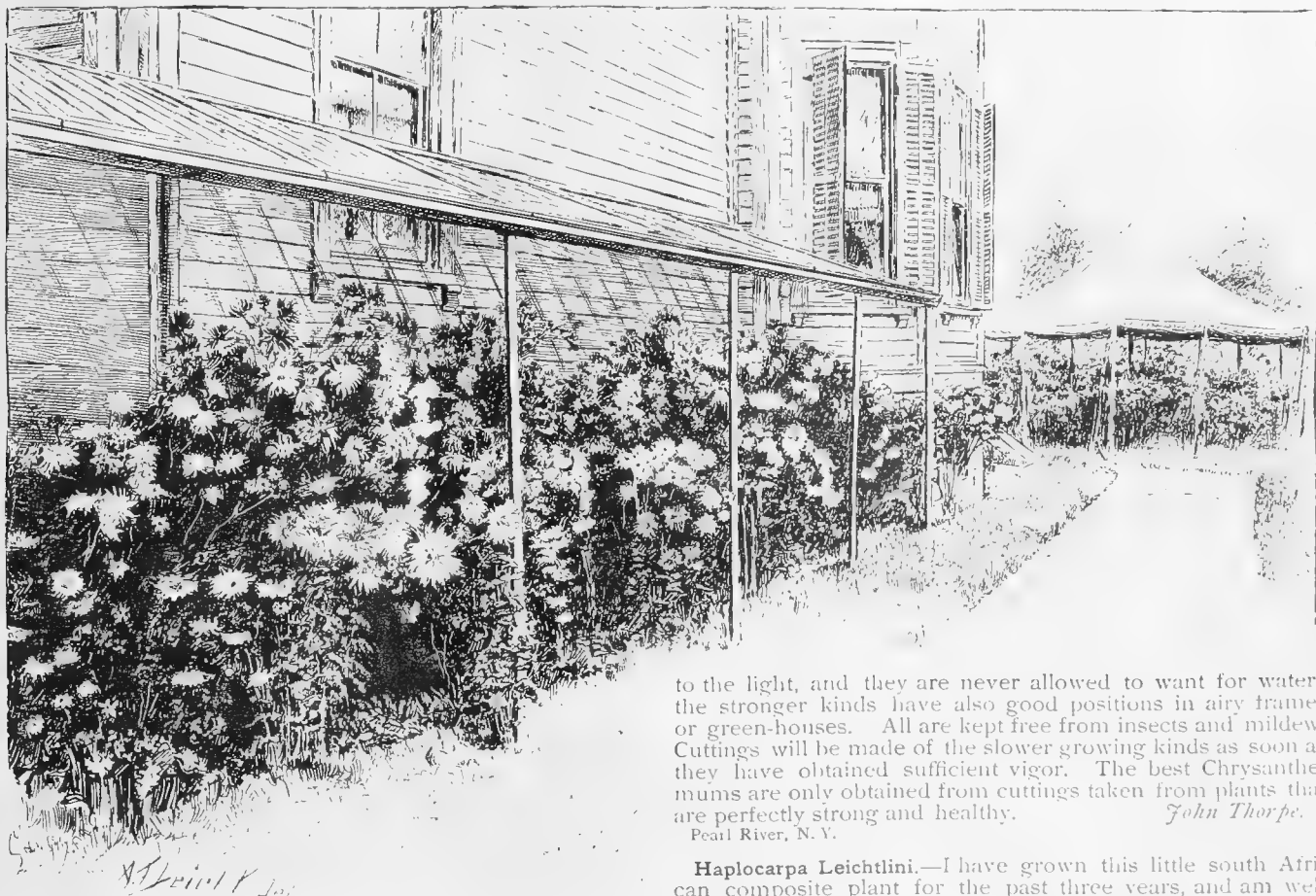
The next in order for general usefulness are several species of *Pteris*, most of which are of the easiest cultivation, while for lasting qualities they are decidedly some of the best. *Pteris Cretica* and its varieties *magnifica* and *albo-lineata* keep in good condition for several days, in water, while *P. serrulata* and several garden forms of this well-known sort are very

cutting, but in many establishments the plants are not large or numerous enough to warrant a free use of the knife; but where a few fronds of this handsome species can be spared for decorating, it will be noted that fronds of *G. dichotoma*, when placed in water, stand the test of a warm room for as long a period as those of any Fern so used, and from their peculiarly formed growth are sure to attract attention and commendation.

Philadelphia, November 23d.

H.

Chrysanthemums.—It often happens after Chrysanthemums have done flowering that they are stowed away either under green-house benches, where there is but little light, or in cellars where there is less, or are left out in the weather to struggle as best they can with the elements. Good Chrysanthemums cannot be had next year from stock subjected to such treatment. Growers who aim at fine plants and fine flowers are now giving their stock-plants the best attention; the weaker kinds are placed in a cold green-house or frame, close



A Garden of Chrysanthemums.—See opposite page.

pretty, and capable of standing a great deal of rough usage; while if large fronds are needed for any special purpose, *P. argyrea* and *P. tremula* are among the best varieties to furnish them, though they will not stand quite so long as those of *P. Cretica* and *P. serrulata*, and they are also rather more brittle.

After the *Pteris* may be placed *Onychium Japonicum* and *Davallia tenuifolia striata*, both of which are excellent Ferns for either florists or amateurs, though they do not recover from a severe cutting in so short a time as plants of the genus first named, and in the case of the *Davallia* it is also somewhat more difficult to raise a quantity from spores. Another Fern frequently seen and very useful at times is *Microlepis hirta cristata*, its long and graceful fronds being seen to advantage in large baskets and similar arrangements. I lately saw a pleasing effect produced by the use of a few fronds of *Microlepis* in a basket of Chrysanthemums, this being one of the few Ferns which may safely be used among these flowers without seeming out of place. Some of the *Nephrolepis* are also very good for our purpose, *N. exaltata* and *N. davallioides furcans* being among the most suitable on account of the strong texture of their fronds and their rapid and persistent growth. Much might be said of the good qualities of the *Gleichenias* for

to the light, and they are never allowed to want for water; the stronger kinds have also good positions in airy frames or green-houses. All are kept free from insects and mildew. Cuttings will be made of the slower growing kinds as soon as they have obtained sufficient vigor. The best Chrysanthemums are only obtained from cuttings taken from plants that are perfectly strong and healthy.

Pearl River, N. Y.

John Thorpe.

Haplocarpa Leichtlini.—I have grown this little south African composite plant for the past three years, and am well pleased with it as a border flower, but it is of no use for cutting, as its blossoms do not stay open after they are cut and removed to an ordinarily lighted room. The plants are stemless, and form rosettes of Dandelion-shaped leaves, seven to nine inches long, glossy above and thickly covered with white, closely-pressed silky down beneath. The flowers are two to three inches across, golden yellow backed with purplish-brown, showy and borne singly on scapes ten to thirteen inches high. They shut up at night and in dull weather. The plant is not hardy, and ten degrees of frost will kill it outright. Although a perennial, it seeds freely and the seeds germinate readily, and if sown in spring they give blooming plants by midsummer, and these plants continue to bloom uninterruptedly till cut down by November frosts.

Glen Cove, L. I.

William Falconer.

Tea Rose, Madame Hoste.—This is a Rose of great promise, and judging from our own experience, it will take rank with the most valuable of its class. It possesses a good constitution, is strong, but not coarse, in growth, and has abundant dark green foliage. The bud is larger than that of *Perle des Jardins*, and of rounder, yet finely pointed, form, while its beautiful lemon tint is most pleasing. Not the least of its charm is its beauty when fully open. Within the past few days flowers have developed here which rival the largest and most

perfect Maréchal Neils. There is little doubt that it will prove a valuable bedding variety; and as to its suitability for forcing under glass there can no longer be a question. M. Guillo, to whom we are indebted for this magnificent variety, has once more placed the lovers of fine Roses under grateful obligation to his house.

Richmond, Ind.

E. G. Hill.

The Forest.

The Forest Vegetation of North Mexico.—X.

IF we continue, over the plains and amongst the foothills bordering them, our examination of the frutescent species of Chihuahua, we shall find sparsely scattered through the chaparral several shrubs of interest in one regard or another—*Cassia Wislizeni*, Gray, in small clumps about six feet high, for its abundant yellow bloom shown in April, and again after the midsummer rains have refreshed the country; *Anisacanthus insignis*, Gray, a slender bush three to six feet high, for its showy light purple flowers, which appear on the leafless branches in March; *Zizyphus lycioides*, Gray, growing in clusters six or eight feet high, for its burden of blue-black berries, long persisting; *Acacia constricta*, Benth., here merely a shrub with tall, slender stems, for the delightful fragrance of its flowers, growing in little yellow heads strung on the virgate branches, which throughout several months of the year betray to all passing near the presence of this shrub; *Lippia lycioides*, Steud., a tall and tender shrub, often supported by other species, for a similarly sweet and long continued perfume; *Dicraurus leptocladus*, Hook. f., a low, soft bush, for its feathery panicles of fruit; *Ephedra trifurca*, Torr., two to ten feet high in clumps, for its rush-like, leafless branches; and *Ephedra pedunculata*, Engelm., a vine-like plant climbing amongst shrubbery, for its numerous scarlet berry-like fruits.

On the extensive sandy plain, in some parts shifting sand-hills, lying south of Paso del Norte, *Bigelovia pulchella*, Gray, *Artemisia filifolia*, Torr., and *Polomintha incana*, Gray, are scattered as small shrubs amongst clumps of Mesquite. In arroyos of the plains *Brickellia laciniata*, Gray, and *Hymenoclea monogyra*, Gray, are woody-stemmed plants a few feet in height. A wild Grape, *Vitis Arizonica*, Engelm., bearing clusters of a few small berries, grows on river banks. Two species of Baccharis, *B. angustifolia*, Michx., and *B. glutinosa*, Pers., border streams or cover their higher gravel. The Osier-like stems of these two common plants, harvested before the resin-covered leaves fall, and bound into bundles, serve as fuel for burning tiles, lime, etc. *Senecio salignus*, DC., and *Varilla Mexicana*, Gray, are woody composites of the lower valleys, conspicuous in March for profuse yellow flowers.

The low shrubs which occupy the mesas of thin soil on a cemented foundation, previously described, are chiefly *Larrea Mexicana*, Moric., and *Flourensia cornua*, DC., the leaves of both covered with resin as a protection against drought, and the following, whose leaves have a velvety covering, serving the same end—*Parthenium incanum*, HBK., *Lippia Wrightii*, Gray, *Buddleia marrubifolia*, Benth., with round heads of orange-colored flowers, and *Leucophyllum minus*, Gray, whose deep purple flowers contrast well with its silvery leaves. Quite at home amongst these, and overtopping them, we notice *Rhus microphylla*, Engelm., six or eight feet high, and attractive with its scarlet fruits, and a depauperate state of *Acacia constricta*, Benth.

Approaching finally the foot-hills by the arroyos, strewn with gravel and boulders, through which their torrents rush down to the plain, channels left dry throughout most of the year, however, we pass a straggling growth of shrubs, the acquaintance of many of which we have already made upon the plain. From the arroyos we follow into the gulches and cañons others, however, which better love the hills,—*Morus microphylla*, Buckl., ten to fifteen feet high, of interest as yielding fruit, though small and barely edible, perhaps the best wild fruit to be found; *Ptelia angustifolia*, Benth., five to twelve feet, of slender, irregular habit;

Garrya Wrightii, Torr., six feet high, a leafy evergreen; *Berberis trifoliolata*, Moric., a Berberry with glaucous, pungent leaves and the usual scarlet berries; *Ungradija speciosa*, Endl., loaded in earliest spring with pink flowers; *Rhus virens*, Lindh., approaching arborescent proportions, with shining evergreen leaves, pink flowers and scarlet fruits; *Loucera albiflora*, T. & G., a white-flowered Honey-suckle; *Cotoneaster denticulata*, HBK., six to eight feet high, and loaded with rosy-white fruits of the size of Huckleberries; *Forestiera phillyreoides*, Torr., six to ten feet high; *Mimosa prolifica*, Watson, four or five feet; *Rhamnus Californica*, Esch., fifteen feet; and *Colubrina Texensis*, Gray, ten to fifteen feet high.

Without the cañons we find preferring more open situations, on the lesser hills, *Eysenhardtia spinosa*, Engelm., one to two feet; *Tecoma stans*, Juss., three to six feet, brilliant throughout the growing season with shining yellow flowers; *Mimosa dysocarpa*, Benth., and *M. Pringlei*, Watson, both pretty, with a profusion of purplish flower clusters; *Mortonia scabrella*, Gray, two or three feet; *Adolphia infesta*, Meisn., spiny and almost leafless, in broad clumps; but a foot or two high; that strange plant, *Fouquieria splendens*, Engelm., with virgate stems ten to fifteen feet high, several spreading from a common crown and terminated by a cluster of flaming red flowers; and *Vanuelinia corymbosa*, Corr., a beautiful shrub of a few feet in height with compact, evergreen foliage and corymbs of white flowers; on the upper slopes and summits—*Ceanothus Greggii*, Gray; *Covania Mexicana*, Don, three to six feet high; *Cercocarpus parvifolius*, Nutt., ten feet; and *Fendlera rupicola*, Engelm. and Gray.

In cañons of mountains about the Laguna country were found, besides many of the above,—*Acacia crassifolia*, Gray, *A. Berlandieri*, Benth., and *A. anisophylla*, Watson, *n. sp.*, *Bauhinia uniflora*, Watson, *n. sp.*, showy, with purple flowers, and *Randia Pringlei*, Gray, with white fragrant flowers, all about fifteen feet high, and doubtfully to be included among shrubs. *Hoffmanseggia fruticosa*, Watson, *n. sp.*, and *Machaonia Pringlei*, Gray, *n. sp.*, a lovely evergreen with white flowers, were but three to five feet high.

Charlotte, Vt.

C. G. Pringle

Correspondence.

An Appeal for Pretty Plants.

To the Editor of GARDEN AND FOREST:

Sir.—I am a vulgarian. I like pretty plants. I also like to own them. I like to see them growing on my little grounds. I like them just as much if they come from far away as if they were first found near at hand; and if they are very unlike what all my neighbors have, I love my pretty plants the better for that. I enjoy gathering around me handsome shrubs and trees which I couldn't otherwise see short of a horticultural park or a big arboretum. To my low taste it isn't the end of all perfection in planting to secure "repose," or general sleepiness, or so refined a commonplace that nobody will notice whether anything is growing near my house. I rebel against Mr. Olmsted and you, and only a revolt will ease my mind and temper when you go to laying down those austere rules of landscape-gardening. What! May some high artist come along, and order out of the ground my pluming Pampas Grass and striped Eulalias, my delicious Japanese Maples and the Paulownia which I cut down every year that it may yield me leaves more than two feet across, my Hydrangea Grandifloras, all in a bouncing bed, my dainty blue Spruce and delicate Deodar Cedar, my Retinisporas, too various to describe in a letter of protest, and my Irish Yew, black as the Sun-ray Pine is yellow? Shall he make me believe that all the people who look over my fence as they go by and who say this lawn is the neatest thing in the neighborhood, lack good taste for admiring a plain man's collection of all the fine things he could find a nice place for and make grow out-of-doors? Why may I not think a dark Austrian and a light Scotch Pine set each other off as well in Pennsylvania as if they were planted t'other side of the sea? Why are not that rich Nordmann Fir and that bland Nobilis as charming side by side as if one were thriving unseen in the Crimea and the other were hidden away in the Sierras?

It's of no use to go on. I am too dull to understand why pretty things cease to be pretty when they become strikingly pretty. I think you have hit it with regard to the glaring calico beds of Coleus. Some sense ought to be shown in putting colors together; but green is not the only color in trees worth looking at by vulgar eyes. If you will make a pilgrimage far out Chestnut Street, in Philadelphia, as I do two or three times a year, just to see a purple Beech, purple as any bedding plant, big as a house, and round as a Cabbage, with a cut-leaved, Weeping Birch for one neighbor and a Cedar of Lebanon hard by in a corner, I am sure you would enjoy these rare beauties which, as a critic, you condemn, because they are not commonplace and easy to overlook. Make your high-class parks as prim and plain as you will, but pardon common folk for putting pretty things where they can see them grow and where they can be proud of them.

Simple Simon.

Chester, Pa.

[Our correspondent has entirely failed to comprehend the scope and aims of this journal if he imagines that we do not cordially share his admiration for beautiful plants. All those which he mentions are handsome and appropriate objects in a garden or upon a lawn adjacent to a dwelling-house; and if he has succeeded in grouping them so as to bring out all their beauties with the same taste and knowledge which he has displayed in their selection, his neighbors have good reason for stopping to look at his garden. But if he has succeeded in grouping them in this manner he may feel very sure that—apparently without his knowledge and perhaps even against his will—he has secured an effect of “repose,” of harmony, of variety in unity, although not necessarily of “sleepiness” or commonplaceness. The mistake he makes, and it is one of very general occurrence, is that he confounds the treatment of a yard or small garden in a thickly settled, or comparatively thickly settled, region, with landscape-gardening—that is, with the development of surfaces, the treatment of water and the arrangement of plants in such a way as to produce living pictures on a large scale, which are successful as they imitate or surpass natural effects. When a small garden or a small lawn forms part of a wider and more extended picture it demands a treatment which shall be in harmony with its surroundings, or with the views, natural or artificial, which can be seen from it. But, as a general rule, a small garden must be treated as a unit and independently of its surroundings; and in such a garden plants which would appear inappropriate and out of place in a large landscape picture, are not only appropriate, but the most desirable plants to use. A garden exists largely for the sake of its plants; with a park or landscape the reverse is the case—the plants exist for the sake of the picture as a whole. But even in the smallest garden an over-accumulation of trees and shrubs and flowers, a confusion of incongruous forms and colors, a fussy, heterogeneous, disorderly arrangement can never be satisfactory, for under such circumstances the plants themselves cannot appear to the best advantage. If our correspondent's garden is as pleasing in effect as we gather from his words, its arrangement is orderly, no matter how unsymmetrical and informal it may be; forms and colors are well contrasted; each plant helps instead of hurting the beauty of its neighbors, and therefore the effect is a reposeful one. That it includes many striking elements does not alter this fact—some of the finest, most complete and reposeful works of art that the world can show contain very striking elements. The whole question is not one of elements, but of their use, and all we have tried to impress upon our readers is that the more striking the material, the more difficult it is to use it really well, and that material which is not striking is the safest to employ. Given a due degree of knowledge and taste there is no reason why all the plants mentioned by our correspondent, and many more besides, cannot be planted in such a manner upon a small piece of ground as to produce an attractive and interesting garden. The development of these plants will afford new pleasures or new disappointments every year; and the man who plants and maintains such a garden should be considered a benefactor to the community in which he lives. It is a

collection of plants, however, which he creates, and not a landscape picture. Each is valuable and interesting, and each is capable of affording real and lasting pleasure; but they must not be confounded, and the man who can successfully plant, and so make the most of his door-yard, must not think that he is a landscape-gardener. — Ed.]

To the Editor of GARDEN AND FOREST :

Sir.—In striking contrast with the vicinity of Lebanon, Pennsylvania, where the portable saw-mill, at so much per acre, has devastated the country of its most valuable trees, I observed during a recent visit to Dauphin County, Pennsylvania, that most of the mountain land throughout an extensive region in that part of the state is still covered with forests. As it is too rough and steep for cultivation, it should, of course, be kept permanently wooded. The soil is good, and it originally produced a heavy growth of Chestnut Oak, White and Black Oak, Hickory, Walnut, Ash and Chestnut trees. Most of this was cut off thirty or thirty-five years ago, but where the land is not burned over or pastured the trees are rapidly re-produced. There are many springs and small streams in this woodland region, and these are of great value, not alone to the few farmers living in the small valleys, but their steady flow is also of importance to the dwellers along the rivers which carry these waters to the sea. Some plan for taking care of these woods ought to form part of the education of the people of this part of the country. They are hard-working, sensible men and women, with a great deal of character, most of them poor. How can they be reached and taught what they need to know and think of and practice in regard to the forest interests of their region and the best ways of managing their own woodlands?

Philadelphia.

M. B. C.

To the Editor of GARDEN AND FOREST :

Sir.—Owing to unusual rains in August and September, and the continued warm weather, much of the vegetation here has put on the appearance of spring. The Elms on the east and south sides of the hills are in full bloom. The Japan Quince and Forsythia are full of scarlet and yellow blossoms. The Daffodils, single Hyacinths, Jonquils and Flower-de-Luces are several inches above ground. The perennial Sweet Pea has put out fresh sprays; their delicate, beautiful green makes a lovely addition to cut-flowers for the table. I have just gathered from my garden, besides late Chrysanthemums, blue (sweet) Violets; Louis Philippe, Bougère, Lamarque, Duchesse Brabant, the fragrant, old-fashioned “Blush-cluster” and pink daily Roses; Dwarf Iris and Woodbine, of which we have a variety that is nearly a perpetual bloomer. I have gathered blossoms from it as late as Christmas Day and as early as February 15th. The trumpet-shaped flowers are scarlet on the outside and orange on the inside.

College Grove, Tennessee, November 29th.

Alice W. Rucker.

Recent Publications.

The Origin of Floral Structures through Insect and other Agencies. By the Rev. George Henslow, Professor of Botany, Queen's College. 349 pages, and numerous illustrations. D. Appleton & Co., New York, 1888.

The author has felt impressed by what he regards as the inadequacy of the theory of Natural Selection to account for the diversities of form and structure in the vegetable world.

As generally understood, the Darwinian theory recognizes (1) the fact that organisms vary from generation to generation, the descendant differing more or less from its progenitors in some way or other; (2) that more descendants are produced than can, under existing circumstances, possibly come to maturity, and (3) that of the variant forms, those will, of course, stand the best chance of coming to maturity which are best fitted to meet their surroundings. In other phrase, Nature selects the fittest, and these survive. But the question naturally arises, may not the surroundings have played an important part not merely in selecting advantageous variations, but in originating all variations? This question has presented itself to the minds of many investigators in the Old World, and it has been thoughtfully treated by Cope, Hyatt and Ryder in this country. This is the inquiry which Professor Henslow places before the reader in the work under consideration, and he employs in some cases the terms which had been previously used by the American students above mentioned, whose works were doubtless unknown to him.

At the outset we will say that the book appears to be a useful contribution to the subject. It is attractive and readable throughout, but to us it has been unsatisfactory, or, rather, unsatisfying. The lack does not arise so much from the method of reasoning or of statement of observed or cited facts, as from the author's use of terms. This may be illustrated by a reference to the beginning of the book. After assuming the ideal type of floral structure, he proceeds as follows: "We may at once consider the 'Principles of Variation,' as I propose to call them, in accordance with which the different members of flowers can be altered." "There are five principles which require special consideration. They are usually designated by the terms number, arrangement, cohesion, adhesion and form." "The above five principles constitute the most important, *in accordance with which Nature has brought about* the infinite diversity which exists in the floral world. There are minor *distinctions* hereafter to be considered, such as colors, scents, etc.; but they are of less importance in investigating the causes at work which have evolved specific and generic differences amongst flowering plants." This sentence, in which we have placed italics, appears to indicate that the author makes no clear discrimination between a principle and a distinction, since the first is said simply to be more important than the latter. In other words, he employs the term principle to express distinctive character or distinction, and yet having appropriated it for this purpose, as he perhaps had a perfect right to do, makes it do double duty as a law or mode of action "in accordance with which Nature has brought about the infinite diversity which exists in the vegetable world." The author has probably not felt that any ambiguity can arise from such use of terms, but the casual reader and the careful student alike, who take up the book for the first time, will be liable to entertain a distrust which is not wholly warranted. The book ought to do good service in stimulating observation and in exciting intelligent inquiry even among those who are not botanists.

A Catalogue of Canadian Plants. Part IV.—Endogens. By John Macoun. Montreal, 1888.

Another part of this work, being Part I. of the second volume, covering the endogenous plants of British North America, has been issued by the Geological and Natural History Survey of Canada. It is to be followed by two additional parts to be devoted to the Ferns, with the Mosses and Liverworts, and to Lichens, Fungi and Seaweeds. Considerable additions to the knowledge of British American plants have been acquired during the past two years, through collections made on the shores and islands of James' Bay, by Mr. James M. Macoun, a son of the author of the catalogue, who himself spent several months in studying the botany of Vancouver's Island, and by Mr. G. M. Dawson, who devoted the summer of 1887 to exploring that portion of the North-west Territories which is adjacent to Alaska, a journey whose most interesting botanical features have already been described by Mr. Dawson in the columns of this journal. The results of this journey, so far as they relate to the Endogens, are contained in the present volume. Professor Macoun estimates that the entire work, when completed, will contain, including 2,500 cryptogamous plants, the enumeration of about 5,500 species of plants, native and introduced, found growing without cultivation, within the limits of the Canadian Dominion.

Periodical Literature.

The November number of the *Bulletin of Miscellaneous Information*, issued from the Royal Gardens, Kew, contains the usual amount of valuable information relating to economic plants and plant products, which makes this periodical invaluable to all persons interested in economic botany and in tropical agriculture.

The principal articles are upon the Lagos Rubber (*Ficus Vogelii*), from which the following quotations are of general interest:

"The investigation of plants likely to yield the caoutchouc of commerce is being carried out in west tropical Africa by numerous correspondents of Kew. Possibly in no other part of the world is there such a wide field for investigation of this kind, and in recent years a considerable trade in India-rubber has arisen through the exertions of officials and traders who have given attention to this subject. At present the chief rubber-yielding plants on the west coast appear to belong to a species of *Landolphia*. These are climbing shrubs with stems four to six inches in diameter near the ground, but dividing above into numerous branches, which support themselves on

the neighboring trees. The rubber of the Gold Coast, known in commerce as Accra rubber, is the product of *Landolphia owariensis*, Beauv. This is probably the best rubber plant in west Africa. The rubber is obtained by cutting off portions of the bark in strips varying in length from three to ten inches. The cuts are made sufficiently deep to reach the latex canals, and soon the crude juice starts out in drops and gathers on the newly-cut surface. The rubber of the *Landolphia* coagulates on exposure to the air, and requires no other preparation other than rolling it up into balls. 'A quantity of the milk is first dabbed on the fore-arm of the operator, and being peeled off, forms a nucleus of the ball. This nucleus is applied to one after another of the fresh cuts, and being turned with a rotary motion, the coagulated milk is wound off like silk from a cocoon. The coagulation takes place so rapidly on exposure to the air, that not only is every particle cleanly removed from the cuttings, but also a large quantity of the semi-coagulated milk is drawn out from beneath the uncut bark, and during the process a break in the thread rarely occurs.'

"Another method of collecting west Africa rubber is described as follows: The blacks wipe off the milk with their fingers and smear it on their arms, shoulders and breasts, until a thick covering of rubber is formed. This is peeled off their bodies and cut into small squares, which are then said to be boiled in water. In European markets such rubber appears in more or less agglutinated masses of small cubes.

"The investigations undertaken by Mr. Millson in west Africa are described in the following notes:

"In nearly all the native villages in the western district of the Colony of Lagos, and, I believe, throughout the colony and the interior, are to be found large spreading trees, which have been planted for shade in the market places, streets and compounds. These trees are of the Fig family, and are called by the natives Abba. I have measured a tree of this species of the age of thirteen years, and found its girth, at three feet from the ground, to be six feet four inches, and its height to the branches twelve feet, while its total height could not be less than fifty or sixty feet, and its foliage area a quarter of an acre. A tree of this size ought to give large quantities of milk if tapped at the right time of the year. Although it was in fruit when I tapped it, and the season being very dry, was in every respect unsuitable, yet the milk exuded in large drops, and flowed for a considerable distance down the trunk. Three quarts of milk were extracted from this tree without injuring it in any way, and I have little doubt that at any time between the months of July and February from four to five gallons could have been obtained with but little trouble. The trees, however, should only be tapped on alternate years, so as to leave time for a fresh growth of bark to replace that which has been removed. It is difficult to form an accurate estimate of the percentage of dry rubber that would be yielded by a gallon of milk, but I have reason to believe from previous experiments on Central American rubber trees (*Castilloa elastica*) of similar richness of milk, that each gallon should give about three pounds of India rubber. The value of the rubber produced depends largely upon the care with which it is prepared, and I have reason to believe that the milk of this species, at least, of the "Abba" tree, can be made to give an excellent sample.

"Should the above facts be established, it becomes evident that plantations of the "Abba" tree would be a highly profitable investment. It is planted by the simple method of cutting off a branch and pushing it into the ground, and on account of the facility and rapidity with which it is raised, the natives used it largely for fence-posts. From the trees already in full growth in the bush and towns a considerable export trade could be readily established, and careful planting would develop this trade to almost an unlimited extent."

In the article upon Liberian Coffee at the Straits Settlements it appears that "as a commercial article Liberian Coffee has not hitherto proved so valuable as was at one time supposed, and the cultivation, though widely distributed, has not become general in any part of the world. There are, doubtless, good reasons for this. It has been found, for instance, that the "cherries" of Liberian Coffee do not become soft and pulpy when ripe, but remain hard and fibrous. Hence it has been found difficult to husk the beans, as the machinery found suitable for preparing Arabian Coffee is not applicable to the Liberian Coffee. Again, the "parchment" skin is tough and woody in the latter, and the labor and percentage of waste entailed in "cleaning" is increased, while the actual market value is lessened. Probably, also, in the cultivation of Liberian Coffee the localities selected for plantations have, in many cases, been subject to long droughts, whereas the species evidently prefers a warm, moist climate, with abundant rains

well distributed through the year. Should the present high price of Coffee be maintained it is not unlikely that the cultivation of Liberian Coffee will prove sufficiently remunerative to warrant further attention being paid to it.

Tea cake is prepared from a species of *Camellia* (*Camellia Sasanqua*), which "is extensively grown in south China for the production of seeds, which produce a valuable oil, known as *Tea Oil*. The preparation is very simple. The seeds are collected in October or November, dried and taken to the mill, where they are crushed in a circular mortar or trough by a pestle driven through it by water power. The seeds after being crushed are steamed, and then the mass is placed in a powerful press, which expresses the oil. The refuse, after the extraction of the oil, is the article known as *Ch'à tsia ping*. It is produced in cakes weighing, when dry, about three ounces and three and a half pounds respectively. The quality of the two kinds of cake is the same. I am not aware that anything besides the seeds of *Camellia Sasanqua* enters into the composition of these cakes. *Ch'à tsia ping* is used by the Chinese as a hair wash and as soap for cleansing both the person and the clothes. It is also used for eradicating earth-worms from grass lawns. For this purpose the cake is crushed and boiled. The decoction is then diluted and poured on the grass, when the worms come to the surface of the ground. As a rule, the small worms die, but the larger ones after a time recover. After being picked up from the grass the worms are often given to fowls and ducks, which devour them readily, and apparently thrive on them, experiencing no inconvenience from the effects of the *Ch'à tsia ping* with which the worms were killed."

There are articles on the Demerara Pink Root (*Spigelia anthelmia*), a plant possessing powerful drastic properties, which renders it exceedingly dangerous for animals to graze upon the ground where this plant grows. On the food grains of India, with an analysis of the fruit of *Croix gigantea*. On the Yoruba Indigo (*Lonchocarpus cyanescens*). On the Trinidad Ipecacuanha (*Cephaelis tomentosa*), from which it appears that "the demand for the official Ipecacuanha is steadily increasing, while the supply of the drug is either stationary or gradually becoming scarcer. Inquiry is, therefore, naturally directed to plants that may possess similar properties, in the hope that they may serve to supplement or replace the drug hitherto exclusively in use."

There are also articles on the Treatment of Vines in France; on Huskless Barley; and a report upon a series of trials of the methods of preparing Ramie fibre, recently undertaken in Paris under the auspices of the French Government.

We cannot find space for more extended quotations for this issue of the *Bulletin*, which is certainly one of the most useful of the various publications prepared in the Royal Gardens.

The last number of *Hooker's Icones*, which appeared in October, completes the eighth volume of the third series, or Volume XVIII. of the entire work.

Among the plants figured in this issue, which are interesting from other points of view than that of pure science, is the curious *Musa proboscidea*, *t. 1777*; a Banana from the hills of Ukami, in tropical Africa, about 100 miles inland to the west of the Island of Zanzibar, the long axis of the inflorescence hanging down, as shown from a photograph, to about one-third the height of the stems above the ground. *Parnassia Faberi*, *t. 1778*, is a minute, but very attractive, species, from Mount Omei, in central China, where it was discovered by the Reverend E. Faber at an elevation of 4,500 feet. *Ilex macrocarpa*, *t. 1787*, is a stout shrub or tree which sometimes attains a height of fifty feet, with large, deciduous leaves and black fruits. It is one of Dr. Henry's interesting discoveries in the Ichang gorge of the Nanto'o Mountains, and was sent also from the Kwangtang Province by C. Ford. It may be expected to be valuable in cultivation. And this is true, also, of *Lindera fragrans*, *t. 1788*, another discovery of Dr. Henry's, who remarks, in regard to this elegant plant, that "the leaves are pounded in milk in the glens, and the powder mixed with that got from the roots of Biota, . . . in a similar way; it is used for making Joss-sticks—sticks of incense used in religious worship." The flowers are fragrant.

Primula Faberi, *t. 1789*, is an addition to the series of Chinese Primroses which are among the most important of the Abbé Delavay's recent discoveries in south-eastern China. It is distinguished by the conspicuous involucre, in which the calyxes of the stout-pediceled flowers are almost hidden. *Lonchocarpus cyanescens*, *t. 1791*, a native of the Yoruba country, a region north of Abbeokuta, is the plant which produces the so-called "Yomba Indigo," which is prepared by

pounding the young leaves to a black, pasty condition, and then made up into balls for market. The dye is a fine deep blue in color and very permanent.

Cadrania triloba, *t. 1792*, is a member of the family to which the Mulberry belongs. It is the "Silkworm Tree," and is known in China, where it is quite widely distributed, as the "Tsa" tree. Dr. Henry reports "that it is common about Ichang, where it is considered to be as good for silkworms as the Mulberry, but it is not used so long as Mulberry leaves can be got, because the tree is thorny and it is troublesome to pick off the leaves. It is hence given chiefly to adult silkworms, and, as Mulberry leaves soon become finished, it is much used." The tree attains a height of twenty feet. The leafy shoots, more especially those from near the base of the plant, are often armed with strong, stout, axillary spines.

Achras Bahamensis, *t. 1795*, a native of the Bahamas, and No. 3837 of Baron Eggers' recent Bahama collection. Mr. Baker finds it "very distinct from the well-known *Achras Sapota*, not only in the leaf, but also in the structure of the flower, having the segments of the corolla twelve in number instead of six, so that unless it be made a new genus, the character of *Achras* will have to be materially enlarged." We venture to suggest that this plant is the *Mimusops Sieberi* of A. De Candolle, a common tree of semi-tropical Florida and of the West Indies—a view which is supported by the plate itself, which very well shows the six-parted corolla, with the two appendages at the base of each division, and the short, triangular and nearly entire staminodia alternate with the lobes of the corolla, which characterize *Mimusop*. The figure in Catesby's "Natural History of Carolina, Florida and the Bahama Islands," to which Mr. Baker calls attention, displays the fruit accurately enough, and there is another figure, although a less satisfactory one, in Nuttall's *Sylva* (iii., 28, *t. 90*), in which the fruit of some other plant seems to have been substituted for that of the *Mimusops*, which is depressed-globular, about one inch in diameter, dark russet brown when ripe, and barely edible.

Sir Joseph Hooker figures and describes, in this part of the *Icones*, a number of Indian Orchids, principally belonging to the genus *Oberonia*, a fact which leads us to hope that his examination of Indian plants for the "Botany of India" is nearing completion, and that the final parts of this work, one of the most important of the great floras to which the studies of many years of his life have been devoted and which no hand but his can so well take up, may soon be expected.

Notes.

The Eulogy of Richard Jefferies, which was reviewed in this journal last week, is published in this country by Messrs. Longmans, Green & Co.

The thirty-first annual meeting of the Missouri State Horticultural Society, held on December 5th at Nevada, was exceptionally interesting. More than one thousand plates of fruit were on exhibition, beside an abundance of choice vegetables and flowers.

In the *Popular Science Monthly* for December will be found a translation in full of the Marquis de Saporta's interesting article on "The Origin of Forest Groupings," to which we called attention some months ago, when it was published in the *Revue des Deux Mondes*.

Mr. Weiger, of the Botanic Gardens in Adelaide, writes to *The Garden* (London) describing one of the finest existing specimens of "Fortune's Rose." It stands near the fountain in the garden, was planted twenty-six years ago, and has received no special care, although copiously watered in the dry season. It is a veritable tree, being about twelve feet in height and the same in diameter, while at a foot above the ground, where it breaks into several branches, the stem measures a yard in circumference.

Dr. Hildebrand, who recently published in Wildeman's *Annalen der Physik und Chemie* the results of his investigations into the action of moisture upon different kinds of wood, says that more care than is now taken should be exercised in choosing wood for measuring-rules. Mahogany and oak are frequently used for this purpose, but are entirely unfit for it; maple, fir, beech and linden woods being far preferable. With no wood, however, can absolute stability, and therefore accuracy, be depended upon, even though polish, oil or lacquer be applied to its surface. Air, saturated with steam, will penetrate all but the very best lacquer, and even ivory does not entirely resist its action.

The Pecan nuts now sold in some retail shops are specially prepared for the market. Large nuts of uniform size are selected and placed in an iron cylinder, which is made to revolve by machinery. The nuts are thus made perfectly smooth by attrition, a uniform dark brown color being given to them by putting into the revolving cylinder some coloring substance, the composition of which is still a secret of the trade.

A remarkable Horse-Chestnut to be growing so far north stands at Skene House in Scotland, one of the seats of the Earl of Fife. It is fifty-eight feet in height and its trunk girths thirteen feet above the swell of the roots, while the branches, in spite of the fact that they were cut back when the tree was younger, droop quite to the ground, inclosing an open area ninety feet in greatest diameter. It stands about 350 feet above the sea level in a soil of deep loam resting on gravelly clay.

It is well known that very few Ferns of any commercial value have been left in Epping Forest or in the other woods around London. According to *The Garden*, however, no mercy is shown to these plants, even in remote country districts. A few years ago Hart's-tongue Ferns were growing in abundance on the old wall which formed part of the ruined Abbey of Rievaulx, in Yorkshire, and they added as much beauty to that picturesque pile as did the Ivy that had crept in through the windows. Last year every plant was carted away to be sold in the streets of the large towns.

Mr. J. G. Baker describes in a recent issue of the *Gardeners' Chronicle* a new Lily collected by Dr. Henry, to whom it is dedicated, in the mountains of Ichang, in western China. *Lilium Henryi* "in general habit most resembles *L. tigrinum*, but the fully developed leaves most recall those of *L. auratum*, and the narrow perianth segments those of *L. polyphyllum*." The flowers are yellow, the base of the perianth marked with minute red-brown spots, three to three and one-half inches long, and borne in a lax corymb sometimes a foot wide, consisting of from four to eight flowers. This interesting plant, and its geographical neighbor, *Lilium Davidi*, are still to be introduced into gardens.

We are indebted to the Reverend John E. Peters, of Mays Landing, New Jersey, for a seasonable note concerning some fine groups of Holly trees, which are remarkable even in that region famous for the beauty of its forest trees. The trees stand on the border of an "old field," just where the high ground falls away to the swampy border of a creek, so that abundant sunshine, a light soil and a full supply of water give them every needed condition for the best growth. They are not of exceptional size, but they stand in distinct clusters, each of pyramidal shape, and since their lower branches are unusually thick and come quite to the ground, their beauty is distinct and striking. The first group consists of five trees, with a circular base thirty feet in diameter and twenty-five feet high, while the largest tree is only nine inches in diameter. Many trees of greater height and girth are found near by, but none of them approach these groups in beauty. Last year the Hollies bore few berries, but now the bright red fruit fairly illuminates the rich, dark foliage. Complaints are heard from other places that the finest Hollies have been mutilated to supply distant city markets with Christmas green. It is to be hoped that the Mays Landing trees will be saved from such an untimely fate.

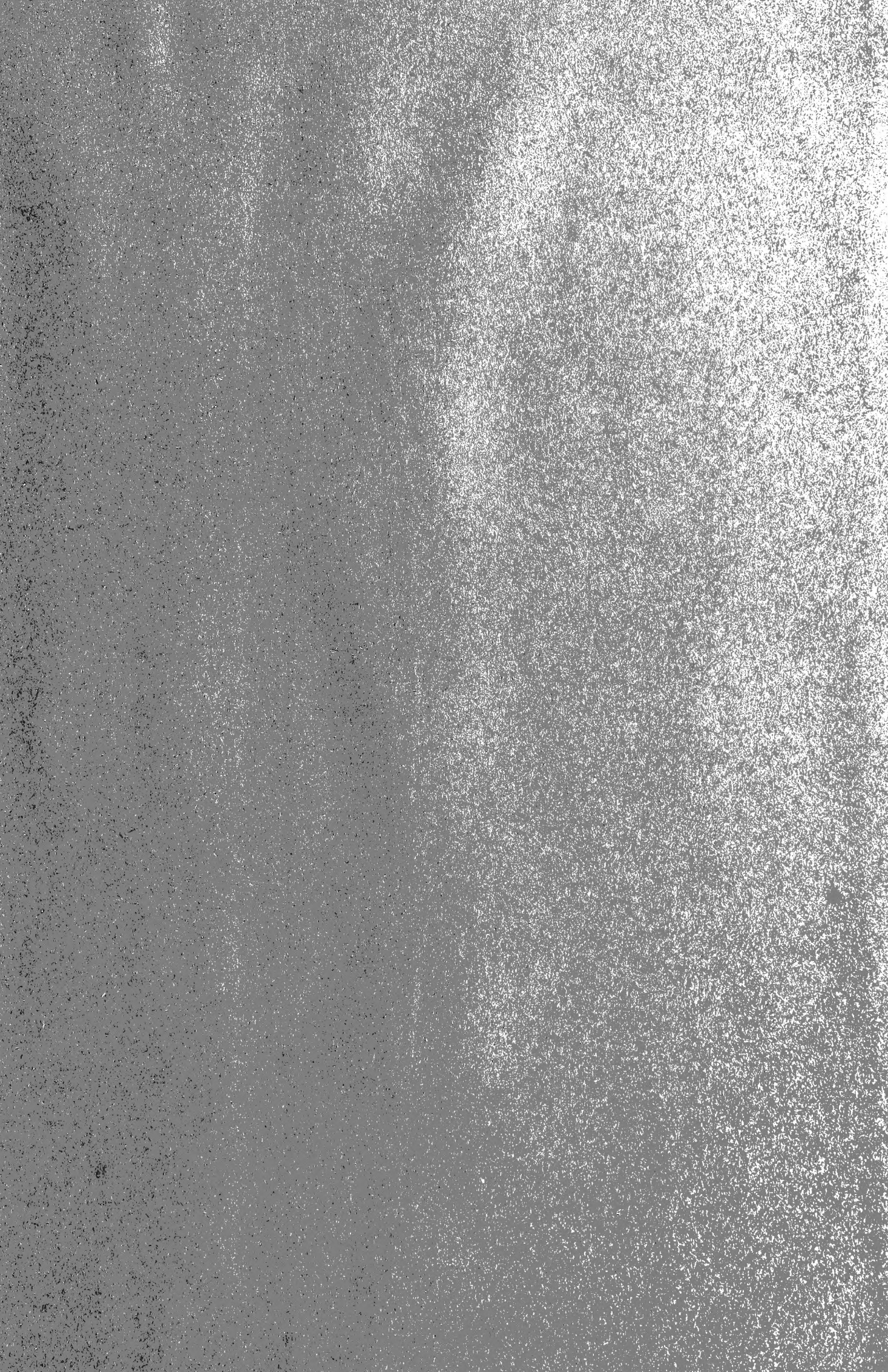
Some of the most venerable Oaks in England stand in the grounds of Holwood House, in Kent, a property which now belongs to Earl Derby, but was formerly owned by William Pitt. One of these trees is called the Wilberforce Oak, because Pitt and Wilberforce were seated beneath it when the latter first divulged his intention to bring forward a bill for the abolition of slavery. At five feet from the ground its stem measures eighteen feet three inches in circumference, while its height is forty-two feet, and the spread of its branches fifty-one feet in diameter. The centre of its trunk is hollow, but the shell is still sound and well covered with bark, and the tree bids fair to last for many years, as the greatest care is now bestowed upon it. Not far away from it stands a similar tree, called Pitt's Oak, which at a yard from the ground girths twenty feet one inch. Like its companion, it is not tall, but has enormous branches, diverging at a height of about eight feet, and a hollow stem. A third example girths nearly twenty-two feet. All these Oaks are of the variety called *Quercus robur pedunculata*. A picture of the Wilberforce Oak, with the stone seat erected to commemorate the historic interview, was recently given in *The Garden*, and various other remarkable trees were noted as existing at Holwood—among them two very large Cork Oaks (*Q. suber*), and an Evergreen Oak (*Q. ilex*)—the Ilex tree

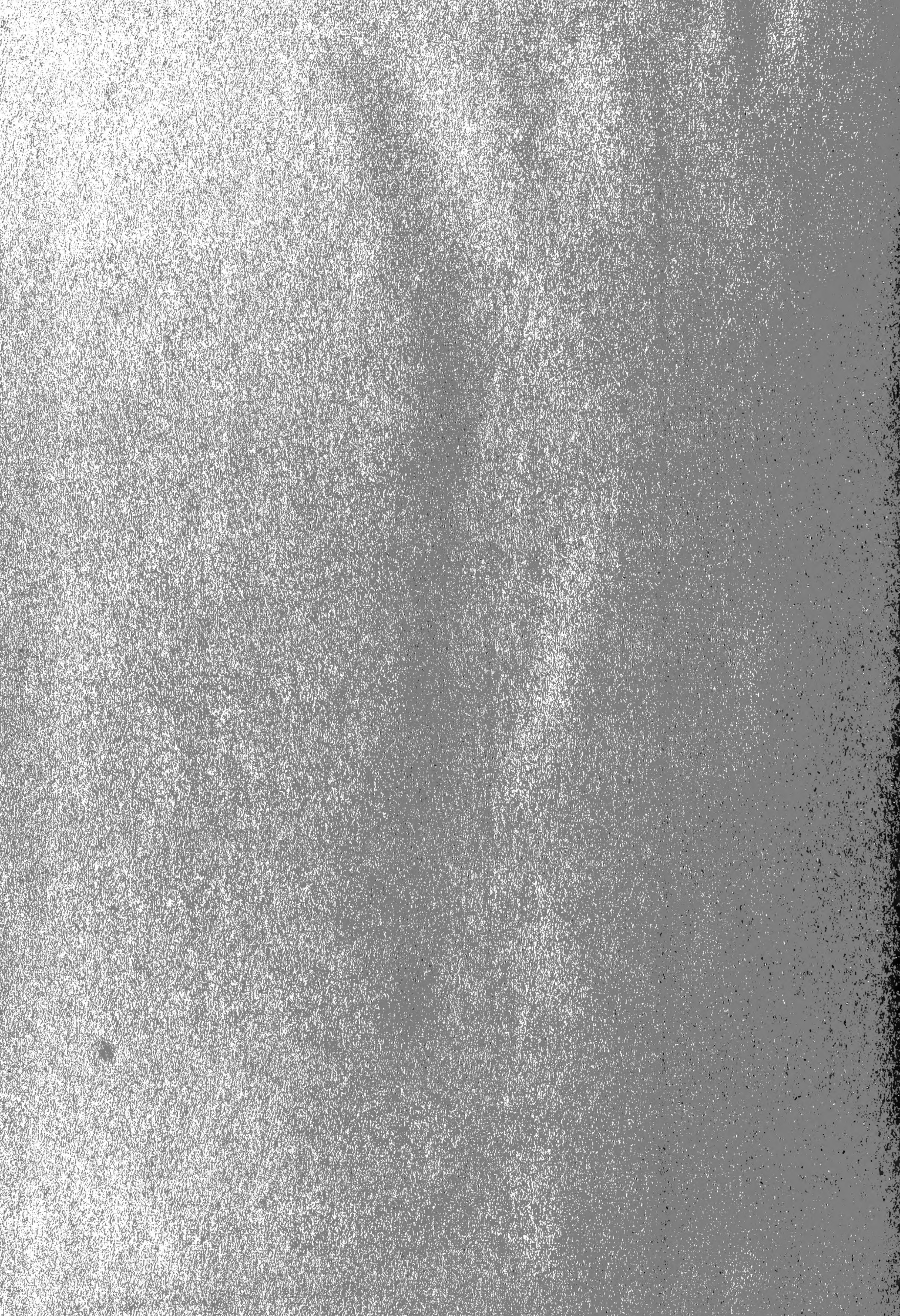
familiar to all travelers in the south of Europe—the circumference of which at two feet from the ground is nearly twelve feet.

Earnest attempts are being made in France to further the planting of fruit-trees instead of ordinary shade trees along the public roads. In Germany the practice is very widespread, and has been very remunerative, the sale of the fruit proving more profitable than the sale of the wood of timber trees. In the vicinity of Mulhouse, says the *Revue Horticole*, the Cherry-trees planted by the roadsides have, from their earliest crop, paid the expenses of their purchase and maintenance. Every visitor to Suabia remembers the Plum-trees, and every visitor to Saxony the Cherry-trees, which line all the roads. As there are so many of them the loss from petty thieving is not serious; and, moreover, the crops are sold as soon as the fruit is set to private persons, who take measures for their protection. When they are ripe those at a distance from the towns are gathered for the market, while in the neighborhood of large places a multitude of booths are erected under the trees, and the whole population goes out on pleasant afternoons to eat the fruit on the spot. In Japan it is the blossoming season of the fruit-trees which draws forth the dwellers in cities; but the inhabitants of the Fatherland seem to get a vast amount of pleasure from thus combining the gratification of the inner man with the delighting of the eye as it rests upon the wide, rich summer landscape.

A correspondent of the *Evening Post*, of this city, writes as follows of Chinese graveyards: "The living occupy the city and the level ground, the dead the hills. No corpse is allowed within the walls of a Chinese city, and without, the vast cemeteries cover the hills, with no fence or other limitation about them. The Chinese family which can afford it builds a 'horse-shoe grave,' or bricked vault, on the hillside, with the end built up in horse-shoe shape. Poorer people stick their dead in shallow graves, on which a small tablet of wood or stone is put. . . . In the rich alluvial plains, where no uncultivable hills are available for burying the dead, a graveyard resembles very much a white-ant village in Africa. The graves are sugar-loaf mounds thickly clustered together. While John Chinaman pays great respect to the dead, he takes care that they do not appropriate much ground that is of value to the living. The cemetery of a Chinese village in the rich rice-growing districts covers very little ground in proportion to the number of the graves. . . . In some parts of China one seems to be traveling through cemeteries most of the time. Particularly is this the case in thickly populated districts where the topography is undulating. The ridges where the soil is thin are then the cemeteries, and a rigid spirit of economy has relegated the alignment of the public roads thereto rather than through the fields. In such districts the traveler is in the company of the dead all day long."

In a recent number of the *Bulletin of the Torrey Botanical Club* Mr. W. M. Beauchamp publishes an interesting article on "Onondaga Indian Names of Plants." Omitting the actual names which he prints in numbers, we may quote a few of the appended translations that show a keen sense for the more salient characteristics of trees and flowers and occasionally a touch of true imaginative feeling. The Hemlock Spruce is called "Greens on a Stick;" the Sassafras "Smelling-Stick;" the Balsam Fir "Blisters," from the look of the bark; the Aspen "Noisy Leaf;" the Iron-wood "Everlasting Wood;" the Water Beech "Lean Tree," from the unlikeness of its habit to that of true Beeches, and the Buttonwood "Stockings," probably because of the way in which it sheds its bark. The Mullein is "Flannel" or "Stockings," the Wintergreen "Birch-smelling Plant," the Thorn-bush "Long Eyelashes," from its long thorns, and the Elder, most poetically, "Frost on the Bush," while Peppermint, as expressively, is "That which makes you cold," Poke-weed is "Color weed," and Poison Ivy (from which the Virginia Creeper is not distinguished) "Stick that makes you sore." The Larch is "The Leaves Fall"—which shows that its unlikeness to all other coniferous trees is appreciated; Plantain "It covers the Road," and the Witch Hazel "Spotted Stick." Peach are called "Hairy," Lettuce "Raw Leaf," Chestnut "Prickly Burr" and the Leek "A Queer Onion." The yellow Moccasin-flower is "Whip-poor-will Shoe," the Marsh-Marigold "It opens the Swamps"—surely a pretty name—and Jack-in-the-Pulpit "Indian Cradle," from its likeness to the hooded cradles actually used by the Indians. In many cases the Onondaga names resemble popular English names, as in the case of the Canoe-Birch, the Red Maple, "A Cap," which means a Raspberry, "Three Leaves," which denotes Clover, the Choke-Cherry, the Bloodroot, Catnip, which becomes "Cat-eating Leaf," and the Partridge Berry.







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